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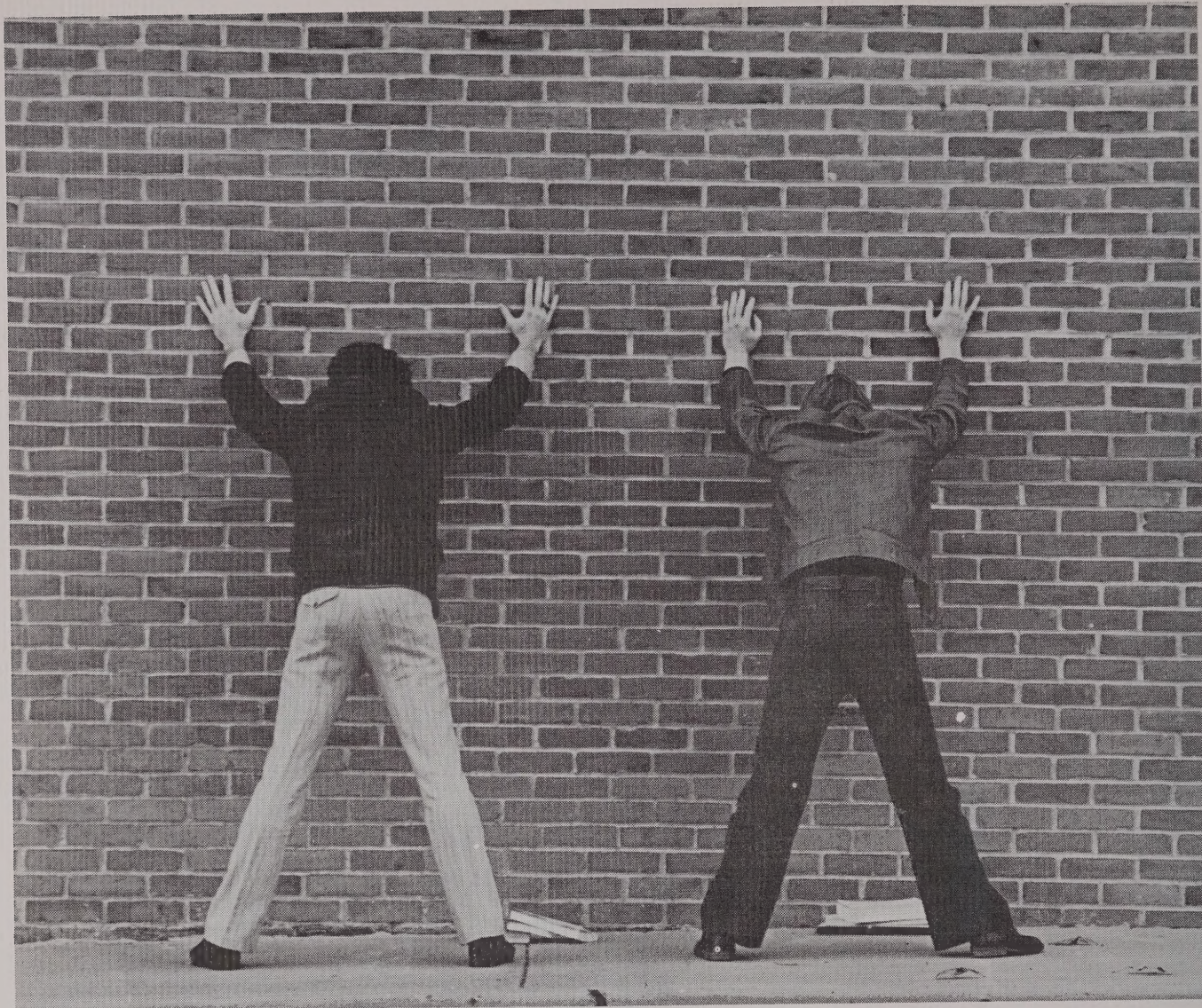
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# JOURNAL OF COLLEGE RADIO



FEBRUARY, 1972



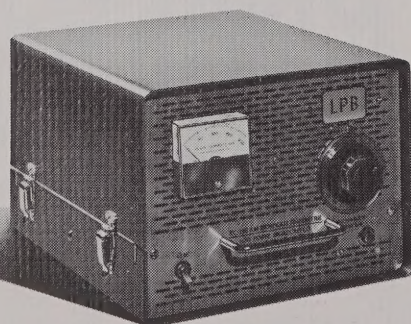


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**VOL. 9, NO. 5**

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# JOURNAL OF COLLEGE RADIO

Intercollegiate Broadcasting System, Inc.  
University of Southern Mississippi  
Department of Communication Hattiesburg, Mississippi 39401

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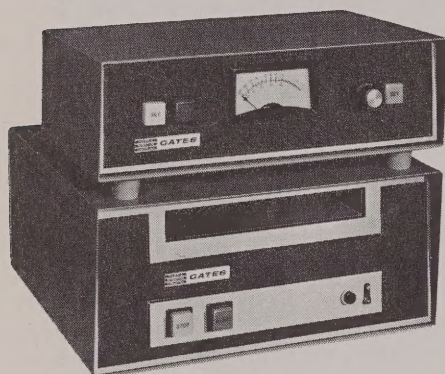
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*cable fm growing on college  
". . . at least six stations, and*

## **PUBLISHER'S**

The exact date of the birth of wired-wireless and carrier-current broadcasting is unknown. Historians can trace this unique service back to Brown University during the 1936 school year. It was then that George Abraham and David Borst interconnected the output circuits of half-a-dozen radios in a dormitory to enable students to hear classical recordings and also to permit two-way communication between the dorm rooms. The idea was so successful that other dormitories were added. In 1938, the net moved from Abraham's dorm room to the Student Union. The following year, low-level r.f. signals were used with the presently established lines to provide reception for all students living on campus.

This type of broadcasting grew and grew and grew. Today, the records of JCR show around 800 colleges and universities broadcasting via carrier-current. The Intercollegiate Broadcasting System was formed and provided member stations with a "Handbook for College Broadcasting." This later became part of the IBS Master Handbook. Low power radiation devices had become so popular in the late 1940s that the FCC realized that its rules for such operations were inadequate, in 1949, proposed stricter regulation of all such devices, with carrier-current broadcasting being placed under the same rules as standard AM stations. IBS immediately took action intended to provide special rules for campus radio which would insure acceptable performance but not impose unreasonable restrictions. Except for a few student-operated educational FM stations, carrier-current became THE radio service on the nation's campuses. During the 1960s, a few stations obtained a commercial FM license, but for the most part, carrier-current was the most predominant of all stations.

There was one problem that each system shared in common—and that was proper technical operation of the station. Carrier-current proved to be one large headache for colleges. The FCC had been asked time and time again to make way for a special service for college broadcasting. A commercial 10 watt FM license was proposed by several college radio leaders. But, alas, the proposal was turned down by the commission. Other proposals were submitted, but each one was refused by the FCC. The Class D, 10 watt educational FM, was authorized, but it lacked one very important aspect—commercialism. Since the foundation of American broadcasting is based upon advertising, college stations needed a commercial facility in order to train future broadcasters. Advertising was also needed to keep the station in operation. Very few were subsidized by the college administration as were the campus newspapers.

*JCR launches a continuing  
"CAFM is a new and exciting*



campuses . . .

probably more, now cable casting

# REPORT

As has happened throughout the history of this country, when someone or something is suppressed, new methods will be devised to carry on. This is not to say that the FCC wanted to completely kill college broadcasting, but it is evident from the commission's rulings that encouragement was never given to the stations.

Now, a new method has been developed. For lack of an official name, the system is referred to as "cable FM." Reluctantly, in 1969, the commission authorized WJC, Juniata College in Huntington, Pennsylvania, to rebroadcast its programming over the facilities of the local CATV system. This new method of college broadcasting has been growing substantially in the last few years. An effort is being made by JCR and Ludwell Sibley, IBS Engineering Manager, to locate CAFM stations. Besides WJC, Sibley has been in contact with KBCC, WCDE, WONY, KCSC, KRUZ, and WKOT. There are probably others which we know nothing about.

IBS has a newly revised Facilities Questionnaire form designed for accommodating CAFM stations. Last year JCR added cablecasting to its ANNUAL questionnaire. The 1972 ANNUAL intends to delve deeper into CAFM. And, the Master Handbook will be revised to include a new section on cablecasting.

This issue contains a special report on CAFM. Unfortunately, many concepts have been omitted due to a lack of information on JCR's part. CAFM is too new for us to establish and or identify certain standards and trends. This special report coupled with the story in the November 1971 issue is the beginning of many future articles on CAFM.

If your station is already using cable or if your station is contemplating cable in the near future, please keep us informed. Other stations will be converting to cable also, and JCR and IBS will be acting as a clearinghouse for information. Several of the areas we are interested in are: callsign, frequency, number of potential listeners, whether advertising is sold, make and model of FM modulator, audio feed method (telephone equalized line, or whatever), nominal frequency response of audio feed, whether the CATV system is school-owned or commercial, copies of any contracts made with the cable company, whether a carrier-current operation is also involved, and whether the FM modulator is at the CATV head end (one-way cable) or elsewhere (two-way).

As soon as enough information has been gathered more articles will appear. CAFM is a new and exciting concept and is definitely worth watching.

investigation of fm cable casting.  
concept and worth watching."

CAPITOL HILL

## McCloskey Report

WTTG-TV  
NEWS

Congress is back in session with a number of bills pending that could help ease the financial squeeze at many of the nation's schools, especially the private institutions.

Many of the bills that are up for passage and in fact many of the ones passed in previous sessions contain money that could go to help build up college radio stations and help AM carrier current stations expand to the FM educational band.

One school in Wisconsin developed some fantastic TV studios with federal money.

You can find out about what money is available by writing for "The 1971 Catalog of Federal Domestic Assistance" published by the Office of Management & Budget. You can write direct to your Congressman (Washington, DC 20515) or Senator (20510) to see if you can get one for free. Otherwise, send \$7.75 to Superintendent of Documents, Government Printing Office, Washington, DC 20402.

### JOURNALISM REVIEWS

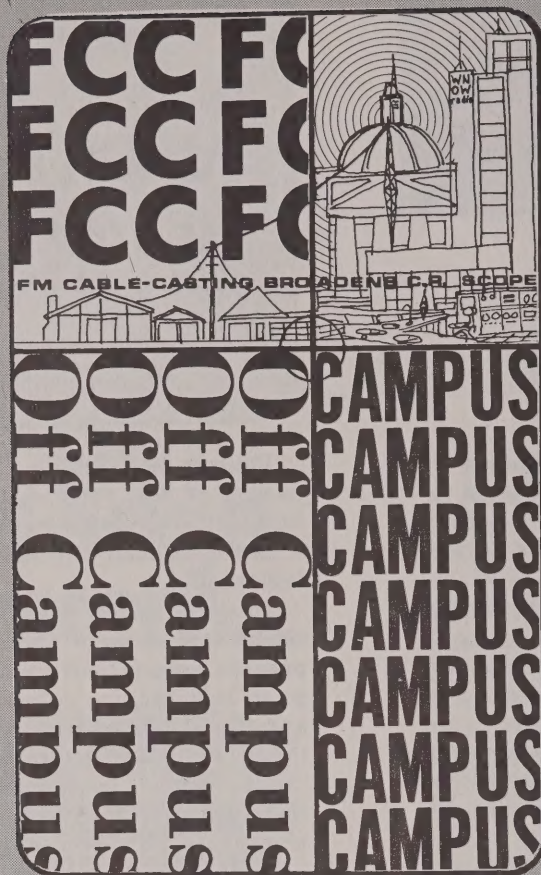
With all of the talk from the Vice President and others who feel that broadcast and print journalism isn't really living up to its patriotic duty there is a sudden spread of journalism reviews.

Many of these could use some good writers from the college ranks to keep track of newspapers and broadcasters in the community to report their strong points and failings in the news business. In some areas reporters for the local media are somewhat hesitant to moonlight for the journalism review for fear of reprisals from their bosses.

One of the best, if not THE best reviews is the ten year old Columbia Journalism Review (\$9 per year, Columbia U. NY 10027) published by the Columbia University Graduate School of Journalism.

(continued on page 13)





## in this issue

Thirty six years ago, the idea of broadcasting on a carrier current system was unheard of, except to a few people interested in broadcasting on a college campus.

It was only twenty years ago when hardly anyone knew what CATB stood for. Like carrier current, CATV began because there was a need for the service it could offer. And also like c-c operations, CATV were not authorized by the Federal Communications Commission.

Today, only a handful of persons know what the term CAFM means. Basically it is a marriage between the two operations above. It is new, it is growing, and it is still being developed. Relatively few people understand it completely—not that it is technically difficult. The basic concept is quite simple. The station hooks into a local CATV operation and "broadcasts" (technically, this is an improper word choice) to an audience.

How successful it will become is still unknown. One college broadcaster said the new system "...is a definite asset to college public relations." Another said that "...listener reaction has been beautiful!" For a community college where most of the student body audience lives off campus, CAFM is the answer to an age old problem. Other stations are still feeling their way and are reserving comment until definite success can be seen.

But on the other hand, the FCC has many reservations about CAFM. In the WJC case, the commission said that the proposal to go CAFM would go beyond the limited purpose and objectives of campus radio operations, which limit the minimum effective power necessary to accomplish the desired results of covering an average college campus population. The commission also noted that the WJC proposal would greatly increase the availability of its campus programming

to the general public and would be indistinguishable from those of licensed broadcast stations. The college was informed that the authorization to operate on the CATV system was conditioned on the station meeting pertinent programming operational conditions which are currently applicable to licensed stations. These were enumerated, in part, as equal opportunity for political candidates, fairness and rules on sponsorship identification, lotteries and obscenity.

The section will attempt to explain what CAFM is, various colleges where it is successful, and how a commercial venture is getting into CAFM. The November, 1971 issue of JCR also contains an excellent article about a CAFM station in operation.

Comments and information relating to CAFM is most welcome at JCR. A follow up series of articles will be forth coming.



'Music For The People'

# Chino State College Pioneers FM Cable Casting In California

By Bob Muller

KCSC, 720 AM carrier current and 97 FM/cable in Chico, California began 20 years ago as "something some kids wanted to do" and has now grown to be one of the pioneer commercial cable-carried stations in the country.

In the early 1950's several students conceived the idea of a carrier current station for Chico State College, then a small, primarily teacher's college located in the upper reaches of California's Sacramento Valley. Through the years the station has been moved from building to building, broomcloset to broomcloset. The station was originally set up in the Life Science building but when it was found that no alterations could be made in these facilities to make them more suitable the station was moved to a loft in the Industrial Arts building. During these early days the station was under the auspices of the Industrial Arts department and run by I-A students. Eventually credit would be given by the Drama department for working on the station.

When the station was first set up as a carrier-current station wire was layed along the bed of Big Chico Creek, which runs through the college campus, carrying KCSC's signal to dormitories a quarter mile away. This resulted in difficulties when representatives of the Federal Communications Commission made an early Sunday morning visit to the campus. Carrier-current KCSC was being received by residents of Durham, California 5 miles away.

By 1965 the station had become a regular item in the budget of the Associated Students of CSC. In 1966 radio work had become a regular class with a faculty adviser and a student station manager setting policy. By 1969 the station was virtually an entirely student run operation with the station answerable to the Communication Board of the Associated Students, a student membered board.

Equipment has always been a problem for the station and, until only recently, the

station had been forced to employ a reworked RCA television board as a broadcast board. In the Fall of 1969 a new board was installed.

In February of 1971 it was decided to pipe KCSC's signal into the local cable TV company. The station soon heard from the F.C.C., however, after it had been discovered the station had been on CATV for a full week. The station was carried by local CATV originally to test the compatibility of the station and cable company's

equipment but the station found they would need authorization from that federal communications body if it were to operate on a CATV system.

The original idea for cable broadcasting in the Chico area came from former station manager Steve Miller, former program director Ron Woodward and the present station manager Frank Dooney and music director Pete Rocha. Dooney carried through plans for a cable carried station and by early July had been granted FCC

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Gary Kelechava, program director of KCSC, about to audition a special presentation by the station.

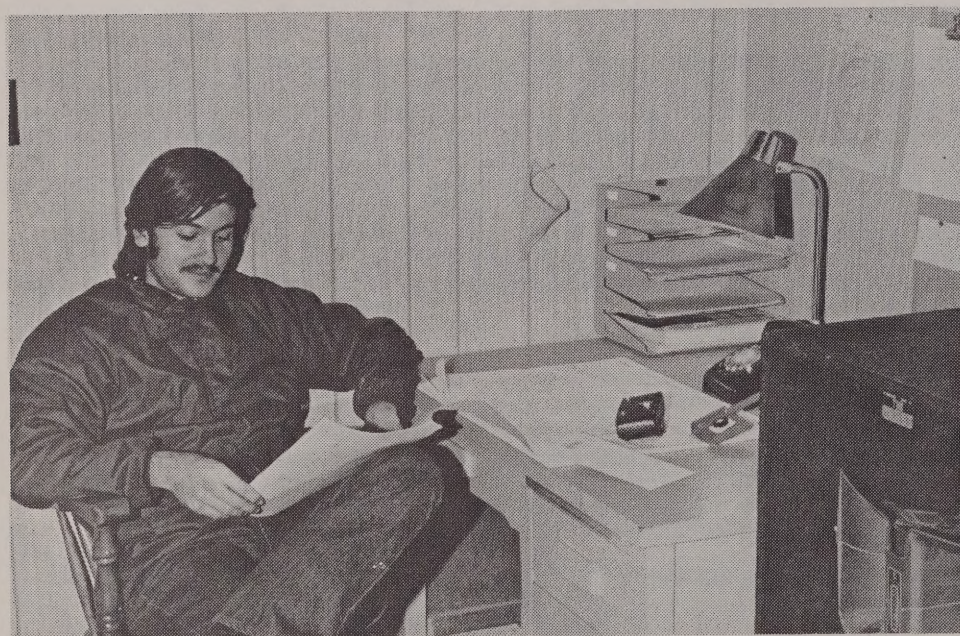




Station Manager of KCSC, Frank Dooney, relaxing in the station's production room.



Looking through a window into the control room of KCSC to see Kathy Paini, news director, about to do the noon news—one of the two daily newscasts.



Music Director Pete Rochas going over the current playlist of KCSC.

approval for the move. After final approval by the college the station began "cable-casting" September 14, 1971.

A progressive rock station, whose slogan is "Music For the People", KCSC broadcasts 20 hours a day with a staff of 35 disc jockeys, engineers and news personnel. Successful alumni of the KCSC staff include Thom O'Hair, currently Program Director of Metromedia Radio's KSAN-FM, San Francisco, one of the most

highly regarded underground FM stations in the country.

Aside from the station's 20 hours of music the station has regular daily newscasts at 12 Noon and 5PM. The station's news staff relies on United Press International wire copy, Earth News and occasional features extracted from the *San Francisco Chronicle* for its news broadcasts. The station's woman news director, Kathy Paini, has featured extensive inter-

views with such personalities recently appearing on campus as Bill Cosby, Richie Havens, Delaney and Bonnie & Friends, Chambers Brothers, Sha Na Na, Boz Scaggs, Kenny Rogers and the First Edition, Poco, Eric Burdon & WAR, the Elvin Bishop Group and others.

The station recently refurbished its facilities which now boast a production room, a control room, and an additional studio to make optimum use of available space. Programming is designed to include all types of music to expose the listeners to the widest range of music so that it may truly be Music For the People.

## LICHTY Named Director Wisc. Cable Commission

Professor Lawrence W. Lichty, of the Department of Communication Arts at the University of Wisconsin, has been named staff director of the Wisconsin Cable Communications Commission. The commission was appointed by Governor Patrick J. Lucey to study cable television and make recommendations for possible state regulation of cable in Wisconsin. The blue ribbon commission is composed of 52 members representing broadcasting and cable interests as well as a number of educational, business, civic and political groups. The commission is headed by Dr. Lee Sherman Dreyfus President of the University of Wisconsin-Stevens Point.

Dr. Lichty will be on leave from the

(continued on page 27)



# CATV Offers College Radio Many Advantages In Broadcasting

By Ludwell Sibley

A relatively new approach to license-free broadcasting is to take advantage of the vigorous growth of cable TV systems and go cable FM. A great many CATV systems distribute the FM band as a supplementary service. A growing number of college stations are arranging with the cable company to add their signal to the FM band.

This technique has some strong advantages. Technically, the signal quality can be even better than off-the-air FM: 15-kHz audio response, noise level down 60 dB or more, low distortion, plus freedom from multipath effects. Stereo is no problem. Advertising is fully feasible, and the potential audience includes the entire town, not just the campus. This latter feature can be a boon to stations at schools, junior colleges particularly, where most of the student body lives off-campus. Frequency-allocation problems are greatly relieved - there's no harm in taking over a channel on which a weak out-of-town station operates, assuming little local listenership, by simply replacing its signal with the locally-generated one. The problems inherent in carrier-current operation - radiation, crossmodulation, limited coverage, and equipment reliability - largely disappear. The cost per listener can be much lower. The cable is an easy way to "go FM" while waiting for a construction permit to be issued.

A number of stations are already on the "air" with this medium. WJC (Juniata College, Huntingdon, PA) achieved widespread notice in 1969 by asking and receiving FCC permission to start cable FM operation. See page 7 of the December, 1969 JCR for details. (Whether FCC permission is necessary is a separate debatable issue. KRUI (University of California, Santa Cruz, CA) has used cable FM on a school-owned campus cable for some years. WKDT (U.S. Military Academy, West Point, NY) uses CAFM too.

WCDE (Davis and Elkins College, Elkins, WV) is operating successfully on 90.1 by cable. John Bry, the chief engineer, explains his system: "We had a contract drawn up and signed, giving us complete freedom to air our programs and commercials for a two-year period to be automatically renewed if there is no objection from either side. We supplied the head-end modulator ourselves (Jerrold Electronics AFM-2...\$250) and rented telephone company lines for audio feed to the CATV system...Listener reaction has been beautiful! What can I say? - We love it!" His article on WCDE's CAFM venture appears in the November, 1971 JCR.

WONY (State University College, Oneonta, NY) uses a Catel FMX-2000 modulator on 106.3 MHz fed through an FM Volumax and an equalized telephone line, also without charges from the cable operator. Bob Brown, chief engineer at WONY, is highly enthusiastic about this arrangement: "...The mutual cooperation between the cable company and WONY benefits both. They sell numerous cable taps to families and college students living in Oneonta and surrounding communities based solely on WONY. We get increased coverage and therefore high commercial revenue. Our relationship is a definite asset to college public relations."

KCSC (Chico State College, Chico, CA) operates in a similar fashion, via a telephone program line and a Jerrold modulator. This gives a potential audience of 20,000 despite an enrollment of only 12,000.

All the stations above supplanted an existing c-c system with cable FM, largely because the c-c operation predated the arrival of CATV. KBCC (Bakersfield Community College, Bakersfield, CA) is trying the unique action of going into operation without any other outlet. The school is a junior college, so most of the audience is off-campus anyway.

The disadvantages of CAFM are not too severe. FM radios are no longer a rarity, a plague of college FM in earlier days. The sets do have to be connected to the cable, of course. Most CATV companies sell extra taps for second TV sets or FM radios. It is also easy to provide a do-it-yourself second tap (the CATV company concurring) or even to set the FM radio next to a piece of twinlead feeding the TV set. A certain amount of listener education will be necessary along this line. The cable operator may even be willing to make your station the sound feed for the "weather scanner" channel.

For stations getting started in CAFM, it is recommended that the station be indistinguishable from standard FM in regard to frequency selection and technical performance. Otherwise unfriendly parties (for example, commercial broadcasters who fear increased competition) may use deficient performance as a weapon against the college station. The frequency chosen should agree with the standard allocation plan. In particular, it should be 88.1, 88.3, 88.5, etc. MHz, not 88.0, 88.2, or some other scheme. The station should stay from adjacent-channel stations, and avoid frequencies 10.6 or 10.8 MHz away from another strong signal. If the station sells advertising, it should preferably choose the commercial spectrum, 92.1 MHz and above.

Audio response should be the standard 15 kHz. To get this quality, it will generally be necessary to rent 15-kHz equalized service from the telephone company, rather than doing one's own equalization on a nonequalized line. This is because most CATV head ends are more than about three miles out of town, which means they are served by loaded cable. Nonequalized loops will thus be subject to the 3.5-kHz response limit of most loaded cable and will not respond to equalization. Fortunately, only one loop is involved, and the extra advertising revenue should more than make up for the cost. Where the CATV system is the two-way type, particularly using separate cables for each direction, a long program line may not be needed at all; the modulator can be located in town and the "upstream" cable used to get the signal to the head end. The cable company's arrangements will naturally be more involved in this case.

Audio limiting and compression are desirable with CAFM, as with any other medium. The modulator is basically a small FM exciter. It should be able to meet normal FM performance limits: audio

*(continued next page)*





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## CATV Offers College Radio

(continued from preceeding page)

response according to the 75-microsecond preemphasis curve; harmonic distortion overall, including studio equipment, less than 3.5% between 50 and 100 Hz, less than 2.5% between 100 and 7500 Hz, and less than 3% between 7500 and 15,000 Hz; 100% modulation corresponding to 150-kHz swing; noise 60 dB or more below 100% modulation; carrier stable within 2 kHz. If the modulator is to go at the end of a long equalized program loop, it should modulate 100% with audio input level as low as -24 dBm, figuring 32-dB maximum loss in the line and +8 dBm at the studio. Otherwise an external audio amplifier will be necessary to pull up the level.

Modulators, like most CATV equipment, have their output rated in dBmV. Zero dBmV corresponds to one millivolt across 75 ohms, which is about 0.0132 microwatt or -48.8 dBm in 75 ohms. A typical modulator capable of 54 dBmV (500 mV) produces about 3.3 milliwatts, or 5.2 dBm in 75 ohms.

Modulators are available from a variety of makers, some of which are listed below in case the CATV company does not want to provide one. Stereo models are available.

Anaconda Electronics  
305 N. Muller St.  
Anaheim CA 92803

Anixter-pruzan  
1963 1st Ave. S.  
Seattle WA 98134

Blonder-Tongue  
1 Jake Brown Rd.  
Old Bridge NJ 08857

CAS Manufacturing Co.  
Box 47066  
Dallas TX 75247

The Catel Corp.  
1030 W. Evelyn Ave.  
Sunnyvale CA 94086

Dynair Electronics, Inc.  
6360 Federal Blvd.  
San Diego CA 92114

Electronic Indust. Engineering  
7355 Fulton Ave.  
N. Hollywood CA 91605

Fing Engineering Co.  
111 Glenn Wy.  
Belmont CA 94002

Jerrold Electroncis Corp.  
401 Walnut St.  
Philadelphia PA 19105

CANADA: DOUBLE DIAMOND ELECTRONICS, LTD., 34 Progress Ave., Scarborough 4, Ontario  
EXPORT: ROYAL SOUND COMPANY, INC., 409 North Main Street, Freeport, N.Y. 11520 U.S.A.



Aside from size and cost, there is no harm in using a regular FM exciter as the modulator. This would be a good temporary use for a 10-watt transmitter while constructing a regular FM station, and in the article that follows a Gates 10-watt unit was used permanently.

Basic information about CATV systems is easy to find. The May 18, 1970 issue of "The Nation" contains a superb 24-page discussion of the problems and prospects of the entire industry and goes into the political intrigues between the cable operators and the licensed broadcasters, each trying to sway the FCC into sandbagging the other. "Broadcast Management/Engineering" contains a sub-magazine, "Cable Management/Engineering", with latest cable news. The November, 1971 issue of the "IEEE Spectrum" has a 15-page article on two-way CATV, emphasizing uses for the bi-directional capability that is now becoming standard.

Consideration is being given to adding standards for CAFM to the IBS Engineering Code, *Master Handbook* 50.90. Comments from individual stations are quite welcome. The IBS Engineering Manager would definitely like to hear of any other stations using CAFM so that their experience can be passed on. Please drop a note to Box 2010, Stanford CA 94305.

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## JCR Book Store

### RADIO NEWS HANDBOOK—Second Edition

By David Dary. A handbook for both aspiring and experienced broadcast journalists. Written by a seasoned broadcast newsmen, it serves not only as a day-to-day guide, but also as a source of vital information for those practicing newsmen who are endeavoring to improve their professional status. For the beginning newsmen, there is a solid grounding in radio news basics, mechanics, and style, plus necessary details on the workings of a radio newsroom. Students will find the book of great value as a source of information covering the practical phases of broadcast journalism. Broadcast announcers, salesmen, and even managers will find this guide helpful in understanding and working with their news departments.

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Order Form on Page 29

## CPR Competition Community Service Grant Announced

The Corporation for Public Broadcasting has announced the opening of the third annual Public Radio Community Service Grant Competition.

All public radio stations which do not currently meet the Corporation's minimum requirements for general support — more than 400 stations — are eligible to apply for ten grants of up to \$15,000 in this competition. The purpose of the project is to enable more stations to meet the minimum criteria for financial assistance and all applicants must affirm that the grant will enable them to meet those criteria by August 1, 1972. There are currently 109 stations that qualify for CPB support.

The criteria, as stated in the Corporation's "Policy for Public Radio Assistance," require that a station be licensed as a noncommercial educational radio station; have adequate facilities for local production and origination; have an effective radiated power of no less than 250 watts with an antenna height of 500 feet above the average terrain (or the equivalent); be on air 12 hours per day, six days per week and 52 weeks per year; have at least two full-time and two part-time personnel; and have a broadcast schedule which serves demonstrated community needs of an educational, informational and cultural nature.

The deadline for competition applications is March 1, 1972. Information on this program is available from Don Trapp, Radio Projects Manager, CPB, Washington.

## WERA-FM Approved

The Lewis College Board of Trustees unanimously approved a proposal to establish WERA-FM at the Lockport, Illinois school. WERA-FM will serve the greater Joliet, Illinois area as well as surrounding communities in a fifteen to twenty mile radius of the school (including the southern portion of metropolitan Chicago). Lewis has applied to the FCC for a non-commercial license.

WERA, presently a carrier current operation serving Lewis and the College of St. Francis in Joliet, received a budget allotment of \$16,000 towards purchase of new equipment and a five-hundred watt FM transmitter and antenna. WERA-FM plans to go on the air in February, 1972.

# This is the world's finest and largest selling turntable.



## Gates CB-77

For complete details on the CB-77 12-inch turntable, write Gates, 123 Hampshire St., Quincy, Illinois 62301



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# Manual Offered By Public Friends Of Public Broadcasting, Inc.

A New manual, "How to be a Friend of Public Broadcasting," has been published by the National Friends of Public Broadcasting, Inc.

Mrs. William Schuman, NFPB chairman, describes it as "a first distillation of information culled from the experience of our members." She stresses the fact that the

manual will help local friends groups reach the goal stated in the report of the Carnegie Commission on educational television: "To make public broadcasting an instrument of the free communication of ideas in a free society."

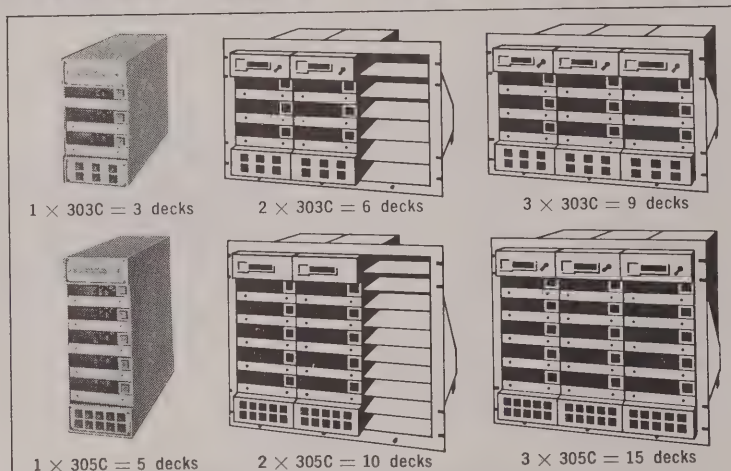
The activities which local friends groups have carried out successfully include: audience and attitude surveys, station membership drives, program promotion, setting up speakers bureaus, conducting studio tours, as well as "community outreach," which expands both the volunteer organization and the station impact into all segments of the community.

In format, the manual is an open-end, work-in-progress, looseleaf notebook. Its material is practical, tested and proven workable by local groups. Divided into eleven sections, each is backed up by actual case histories.

Plans call for adding material on a monthly basis. Copies have been sent to each of the 90 members of NFPB and to their respective station managers. The manual is available only to members of the organization.

## Spotmaster

### Multi-Cartridge Decks Grow with Your Needs!



Mix and match these new SPOTMASTER multi-cart decks. They're designed to meet your needs today, and grow with them tomorrow.

Look at our 303C and 305C Mini-Decks. Space-saving combinations of 3, 5, 6, 9, 10 and 15 decks accept type A carts. Slightly wider is our Mini-603C (not shown), accepting both type A and B carts, three decks to a unit, six decks to a compact rack.

All these mini-giants feature plug-in, modular, solid state construction with separate audio amplifiers, selectable output level (-10, 0, +8), logic switching, and many more features. They're ideal for manual operation or programmed automation systems.

Save still more money with our time-tested Five•Spot and Ten•Spot multi-cart players. You can even get plug-in record modules. Write or call for complete information:

## BROADCAST ELECTRONICS, INC.

A Filmways Company

8810 Brookville Road, Silver Spring, Maryland 20910 • (301) 588-4983

## Spotmaster

### Compressor-Limiter Amplifier



(The Great Leveler)

## \$445!

You can stop riding gain now, even when a shouter and whisperer are on the same talk show. The Model CLA 20/40 Compressor-Limiter Amplifier does it automatically . . . instantaneously . . . for both AM and FM. Switchable controls permit symmetrical (FM) or asymmetrical (AM) peak limiting; pre-emphasized or flat response; compress/limit, compress only, or compress/limit off. Automatic gain control range is 40 dB dynamic, and the compression ratio is better than 10:1. All solid state, plug-in modular construction assures trouble-free reliability. Write for complete details.

## BROADCAST ELECTRONICS, INC.

A Filmways Company

8810 Brookville Rd., Silver Spring, Md. 20910



Using a Bruel & Kjaer Type 3347 Real-Time 1/3-octave Analyzer, we plotted room response in some of the busiest recording studios in the country.

# Real proof, in real time, that a new order of quality is here.

Then we repeated the response measurements substituting a new Electro-Voice SENTRY IV speaker system for the existing studio monitor.

In every case the SENTRY IV was measurably flatter. Measurably wider range. Even where broad-band equalization had been attempted and was in use (versus the SENTRY IV unequalized).

But perhaps most impressive, the working studio engineers judged the SENTRY IV subjectively better sounding than the speaker systems they had been using for years. In every single studio!

There are a host of good reasons why, including lower distortion and outstandingly uniform dispersion from the first new sectoral horn design in 25 years. With response at 60° off-axis that is identical to on-axis performance.

Plus three new drivers, full-range horn loading, and a computer-aided design that led to more efficiency and higher power handling than any of the standard monitors.

You can read about SENTRY IV design in an AES paper reprint we'll send you. It was written by our Ray Newman (left) the man behind the SENTRY IV. We can also show you curves and specs that make impressive reading. And even better listening.

But we know you won't be truly convinced until you hear the SENTRY IV. That's why we're scheduling studio demonstrations now all across the country.

You can arrange an audition through your E-V sound specialist. Or write us today. But be prepared to accept a new standard in sound.

The Electro-Voice SENTRY IV monitor speaker system.



**Sentry IV Professional Monitor and Sound Reinforcement Loud Speaker**

Response: 50 — 18,000 Hz. Dispersion: 60° x 120° from 600 to 15,000 Hz. Sound Pressure Level: 117 dB at 4' on axis, with 50 watt input. Dimensions: 27-3/4" w. x 20-5/8" d. x 50-3/4" h. as shown. Weight: 148 lbs. \$495.00 suggested professional retail net.

**ELECTRO-VOICE, INC.**, Dept. 221 CR, 681 Cecil Street, Buchanan, Michigan 49107

In Canada: EV of Canada, Ltd., 345 Herbert Street, Gananoque, Ontario  
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# The Compact Criterion.

Only  
8½ inches  
wide.



We've taken the world's finest tape cartridge playback system and reduced both cost and size. Two units now fit in the space formerly occupied by one!

The Compact Criterion, developed for crowded control rooms, retains the features that made the Criterion tape cartridge system the industry standard for excellence. New features include: single-card electronics for mono or stereo units, air-damped solenoid for whisper quiet operation and optional high-speed cueing.

For complete information on the Compact Criterion playback unit, write Gates, 123 Hampshire Street, Quincy, Illinois 62301.



## What Others Are Saying

### BROADCASTING REFLECTIONS ON THE FUTURE OR STOP THE MUSIC, I WANT TO GET OFF

I'd like you all to stop whatever you planned to do today. Forget about that playlist for awhile. Forget about that letter to Libido Records, asking for service. Forget about that budget shortage. Forget it all for a moment and look seriously at the 1970's, and what this decade will bring for broadcasters, both professional and collegiate. As Bill Gavin said recently, the only unchanging aspect of broadcasting is change. What are you, the general manager, program director, announcer doing and thinking that will make future changes good changes for our profession. What plans have you made for yourself and your radio station? Are they plans which will reach fruition next week or next month? Next year or next generation? What should you be thinking about? What is really important to broadcasters today regarding the future?

At this risk of sounding like an all-knowing guru, I would like to suggest areas of concern for all of us in tomorrow's world of broadcasting.

1. **Sociological Change:** A simple glance at your environment will tell you people are changing. Yesterday's mores, traditions, ethnic groupings, prejudice... all of these markings of society are in transition. How is your programming responding to the transition? Is today's audience the audience you will want tomorrow? What are the indicators of real change in your audience's society? Are your commercials, and is your music, relevant to the burgeoning society? And as a person of management, will your hiring practices change? Will the sexual barriers come down, and will females become really important in your air sound; not as a novelty, but as a real contribution? For sure, tomorrow's manager and program director will have to have a working knowledge of sociology (and related subjects such as history and economics).

2. **Marketing and Business Changes:** Let's face it, broadcasting is as much a business as it is an art form. Too much attention given to one will hurt the other, weakening the total concept. Regarding marketing, broadcasters must become aware of what their product really is and how it must be merchandised. (Think for a moment: What are you "selling" when you promote your radio station? Communication? Heavy jocks? Music? News? Ann Landers? Stereo sound? Slick commercials? What?). Will advertisers in the future only desire to see your percentage of audience share or will they ask for something more? What will that something be? What will you have to prove and explain to advertisers? Or will advertising cease to be important to you and your station?

Concerning business administration, the entire spectrum of broadcasting as a profit making organization in a competitive, capitalistic society must be considered. Managers must be acquainted not only with broadcast laws, via the federal government, but with business laws. With the advancement of broadcasting in the future, acute personnel problems will prevail. Management must be able to cope with problems using science, psychology and practicality. What about unions? Will they be important in the 70's? What can management do to operate efficiently in the presence of a union?

The broadcast manager must look at his financial status. How much capital investment can be allowed in light of profits? Will profits or losses for a given year in the future strictly be a product of a good or bad year for sales? Will it be necessary for small market stations to underpay their staff because it is inevitable the staff will move on anyway? How much should be spent on personnel? What is the most important asset of the small market station; the medium market station; the major market station? Indeed, the manager of the future will have to be as astute businessman and administrator.

*(continued next page)*



# What Others Say

(continued from page 12)

3. **Technological Change:** In a business solely maintained by technology, broadcasting (and broadcasters) must anticipate technological change. One of the most important changes in the next ten years will be the development and growth of quadrophonic broadcasting in FM. How knowledgeable are you about this concept? What is the difference between the discrete and matrix quad system? Will your station be forced to change to a quad sound in the future, or won't it really be important? What kind of costs and equipment will be involved in quad? Another development in broadcasting technology will be the use of the computer and data processing in the day to day functioning of a station. Have you investigated automated programming? Does it have a future in your market? Does automation really save a manager money? What of its maintenance requirements? And even if automation is judged impractical for you, what about computerizing your program log or your billing system? What will managers have to know about computers to stay alive in a competitive market?

Obviously, there are more areas of development in broadcasting to be considered by radio station management of today when planning for the future. The important factor here is a perceptive manager who keeps one eye on his present situation and the other on the changes occurring in the broadcasting environment. The manager of tomorrow must indulge himself in a constant program of education. *Billboard*, *Gavin*, *Broadcasting* and other similar journals must be augmented by *Psychology Today*, *Business Week*, *Wall Street Journal* (and others) in the manager's magazine library. Books such as *The Peter Principle*, *Up The Organization*, *The Greening of America* should be included on the manager's "must-read" list.

To be successful, the broadcast manager of tomorrow will have to surround himself with a knowledge of the society in which he is doing business. That "knowledge" need not be intensive, but it should be adequate enough to provide a substantial peripheral overview of the situation. It may not provide the answer to the manager's question, but it should, at least, determine the correct question.

(Reprinted from *FORMAT*, Jan., 1972)

# Capital Hill

(continued from page 3)

As an example of CJR's depth of coverage, its regular "Darts and laurels" column in the January issue passes a "Dart: to station WQWK-FM in State College, Pa. for firing James C. Lange, a graduate journalism student who doubled as a station newsman. Lange's offense was to broadcast a five-minute feature on the failure of local merchants to post maximum allowable prices as required under the federal freeze. An Advertiser cancelled \$200 worth of business, and Lange was let go—for failing to clear his story with management.

## CALIFORNIA SCOOP

All of which reminds me of a story that took place last May out in California.

According to wire service reports Rosemarie King of KERS, the radio station at Sacramento State College picked up an unverified report while on her beat at the State Capitol.

She then went on to broadcast what she had heard, that Governor Ronald Reagan had paid no state income taxes for 1970. The Governor's office later explained that Mr. Reagan had lost money on investments

during the year offsetting his income.

All of this raised quite a furor in Sacramento. The Governor charged the press with invasion of privacy and a search was launched to see who had leaked the information about the tax return.

The Democrats, of course, had a hay-day.

The interesting thing pointed up by this story is the fact that something broken on a college station ended up making such a huge splash and that although other reporters had access to the same "rumor" which Mrs. King reported, as a rumor, it was a college broadcaster that took the plunge and broadcast it after deciding that she was "pretty sure of her source."

## MORE ON FUNDS

Speaking of taxes and such. I am told that many college broadcasters are missing the boat by not purchasing surplus material from state and federal governments.

By virtue of being part of an educational institution most college radio stations are eligible to buy surplus. In addition to microphones and such you might well find an air conditioner for that stuffy studio or a desk to replace the pile

(continued on page 27)

# Election Completed

According to Mr. Herbert B. Barlow, Jr., Assistant Secretary of the board of directors of the Inter-collegiate Broadcasting System, Inc., the disputed election of officers has been completed.

At press time, it was reported to JCR that 152 ballots were mailed to the voting membership. Of these, 93 ballots have been returned. Ninety-two of the ballots returned were valid in accordance with the criteria established by the court order of last fall.

Since 77 ballots constituted a quorum, the following persons have been elected to the board of directors: George Abraham, Herbert B. Barlow, Jr., David W. Borst, Paul Brown, Red Collins, Joseph D. Coons, Richard H. Cropmton, Jack W. Deskin, George F. Eustis, Jr., Robert I. Freedman, Donald A. Grant, Tom Karnewski, Frederick J. Kass, Jr., William R. Malone, James D. Nelson, Richard E. Pittenger, Ludwell Sibley, Joseph S. Steinberg, Jeffrey N. Tellis.

More details will be forthcoming at a later date.



# MUSIC INDUSTRY DEPARTMENT

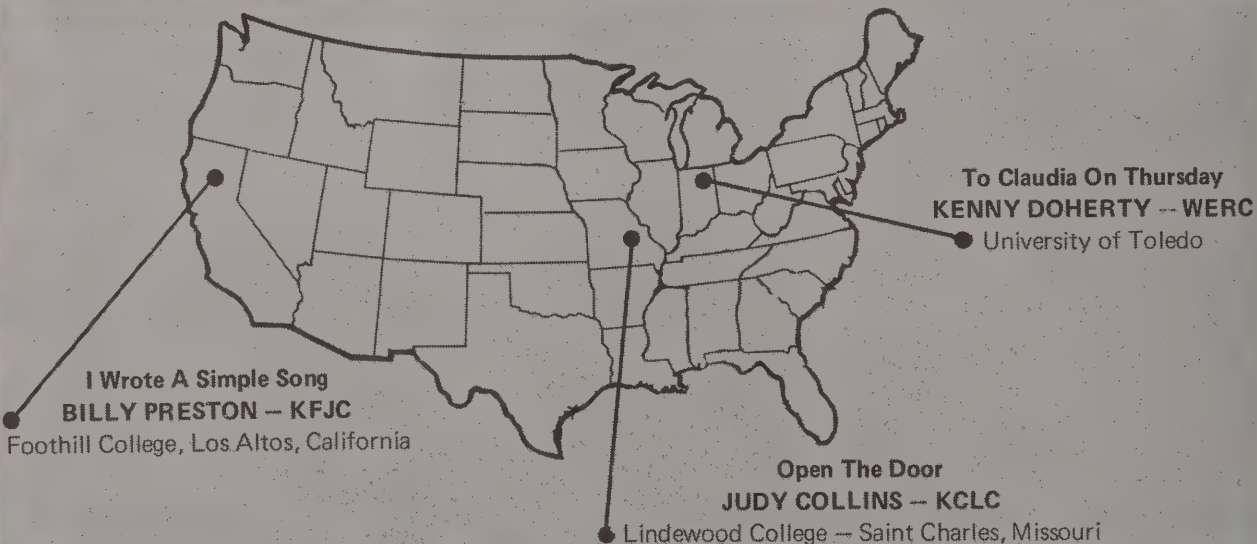
## SINGLES

WHITE LIES, BLUE EYES  
LOOKIN' FOR A LOVE  
HURTING EACH OTHER  
THE HARDER I TRY  
FEELIN' ALRIGHT  
NEVER BEEN TO SPAIN  
BEHIND BLUE EYES  
BLACK DOG  
ANTICIPATION  
BABY LET ME ROCK AND ROLL YOU  
DON'T SAY YOU DON'T REMEMBER  
LEVON  
FIRE AND WATER  
MOVE EM OUT  
FOOTSTOMPIN' MUSIC  
ROCK AND ROLL STEW  
TUPELO HONEY  
WITCH QUEEN OF NEW ORLEANS  
HEY BIG BROTHER  
WITHOUT YOU

BULLET  
J. GEILS BAND  
CARPENTERS  
FREE MOVEMENT  
JOE COOKER  
3 DOG NIGHT  
WHO  
LED ZEPPELIN  
CARLY SIMON  
TEN YEARS AFTER  
BEVERLY BREMERS  
ELTON JOHN  
WILSON PICKETT  
DELANEY & BONNIE  
GRAND FUNK RAILROAD  
TRAFFIC  
VAN MORRISON  
REDBONE  
RARE EARTH  
NILLSON

BIG TREE  
ATLANTIC  
A&M  
COLUMBIA  
A&M  
DUNHILL  
DECCA  
ATLANTIC  
ELEKTRA  
COLUMBIA  
SCEPTER  
UNI  
ATLANTIC  
ATCO  
CAPITOL  
ISLAND  
WARNER BROS.  
EPIC  
RARE EARTH  
RCA

## BREAKS



## ALBUMS

AMERICAN PIE  
LED ZEPPELIN  
CAROL KING MUSIC  
LIVING  
BOB DYLAN'S GREATEST HITS  
FROM THE INSIDE  
POT LIQUOR  
KILLER  
LOOK AT YOURSELF  
OTHER VOICES  
BLACK MOSES  
GATHER ME  
TUPELO HONEY  
FLOWERS OF EVIL  
RAMSEY LEWIS INSIDE  
FEARLESS  
A NOD IS AS GOOD AS A WINK  
HARMONY  
MADMAN ACROSS THE WATER  
JONATHAN EDWARDS

DON McLEAN  
LED ZEPPELIN  
CAROL KING  
JUDY COLLINS  
BOB DYLAN  
POCO  
LEVEE BLUES  
ALICE COOPER  
URIAH HEEP  
DOORS  
ISAAC HAYES  
MELANIE  
VAN MORRISON  
MOUNTAIN  
RAMSEY LEWIS  
FAMILY  
FACES  
3 DOG NIGHT  
ELTON JOHN  
JONATHAN EDWARDS

UA  
ATLANTIC  
ODE  
ELEKTRA  
COLUMBIA  
EPIC  
JANUS  
WARNER BROS.  
MERCURY  
ELEKTRA  
ENTERPRISE  
NEIGHBORHOOD  
WARNER BROS.  
WINDFALL  
CHESS  
UA  
WARNER BROS.  
DUNHILL  
UNI  
CAPRICORN





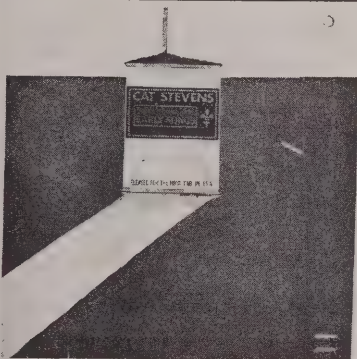
**FAMILY  
(FEARLESS)**

UNITED ARTISTS UAS 5562

Family has been a going group on the English scene for quite awhile, and this album should prove their popularity with the campus set on this side of the Atlantic. They must be listened to at a live gig to be fully appreciated, but with the fifth album they will almost certainly have many admirers here.

**LIGHTHOUSE EVOLUTION 3010  
(THOUGHTS OF MOVIN' ON)**

Power sounds are again the keynote in the group's followup album. This album should fare pretty well on most AM stations as well as campus outlets. Includes the new single "Take It Slow (Out In The Country)."



**CAT STEVENS DERAM DES 18061  
(VERY YOUNG AND EARLY SONGS)**

The musical history of the ever-popular performer is traced back to 1967 in this collection of previously unheard cuts. Background sounds are a little harder than Cat's latest work, but the album is a must for campus stations.

**QUINCY JONES A&M SP3037  
(SMACKWATER JACK)**

Quincy brings all areas of music together from popular ("Smackwater Jack") to soul ("What's Going On"). This is a fine set of arrangements with some of the greatest jazz musicians performing. A must for progressives.



**LORD SUCH AND HEAVY FREINDS  
COTILLION SD 9049  
(HANDS OF JACK THE RIPPER)**

This heavy English group keeps the fires burning under that good ol' rock and roll. Such energy songs as Chuck Berry's "Roll Over Beethoven", and a Little Richard "Tutti Fruitti Medley" show off the rawness, vulgarity, and drive of the group to its advantage. Watch this one.



**MUSIC INDUSTRY DEPT.**

**DISC NOTES**

By Rick Spence

Since this is the first issue of the new year I would like to start off by wishing everyone a happy and prosperous new year, although I've heard that it is in bad taste to wait until this late date. However, I would also like to be the first to wish everybody a Happy Easter, so you can take your choice of well wishes.

I was wondering ever since Christmas whether or not station's mail service was seriously affected by the infamous efficiency of the good ol' U.S. Postal Service. It would seem that for all the knowledge that those folks have about how much the use of the mails during the entire Christmas period increases, that they could plan ahead slightly so that we could get some of our mail less than two weeks late. Oh well, I guess we'll just have to wait on the next postal rate increase.

Chuck Lackner, Music Director of KCLC, Lindenwood College in Saint Charles, Missouri, writes to inform me that his station's long awaited power increase is now in effect. The FM now has fifteen-hundred watts of power and covers an area of about fifty miles. Lots more power to record companies also, as coverage increases expand their product's accessibility to the ever expanding record market.

Over in the complaint department, and we have a bunch of them this time, it seems that some companies are still offering either sporadic or non-existent service to the gold mines (campus stations). Steve Alt, Music Director of KFJC FM in Los Altos Hills, California, is having trouble with service from Bell and Motown records. He says it is evidently the local distributor which has caused this problem. Bell and Motown please take notice, as it is obvious that the station programs your type of product by looking at their survey sheet.

Robert Everett, of Elmira College in Elmira, New York, informs me that their two stations are also having trouble with record service. They have an AM station which covers the dormitories, and an FM

(continued next page)



## Disc Notes

(continued from preceding page)

progressive/classical station which has a range of about five miles. He further states that the companies that do give decent service are Columbia, Motown, RCA, Fantasy, and a few independents. All other companies should take notice of this problem because from a competitive standpoint, you are not being represented in this market. Of all things to omit, Robert did not include their station's call letters, but I'm sure that a note to Robert Everett at the following address will get you record companies the required mailing information: Elmira College, Elmira, New York, 14901.

Received a nice letter from Steve Feld, the Head Record Reviewer of "Poor Richard's", a fine looking weekly publication devoted to record reviews and stories about artists. He would like help in obtaining promotional copies of company releases for review purposes. In looking through the copy of "Poor Richard's" which was sent to me, I was impressed with the thoughts expressed in some of the articles. It would profit you record companies to obtain a copy of the publication to see its quality. Steve can be reached at 304 Dickinson, University of Massachusetts, Amherst, Mass., 01002. I would imagine that if a station would like to receive a copy to look through, it could be arranged by writing to Steve. Steve also mentions that these copies are also valuable to him in aiding the programming of WMUA, the University of Massachusetts radio station.

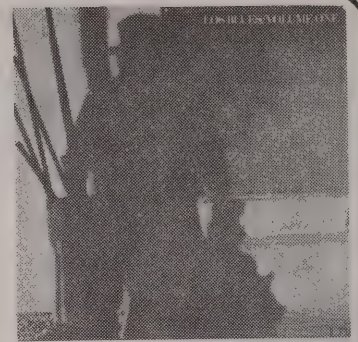
Impact Productions of Mattapan, Massachusetts is offering a package of "mood sounds" that are intended as a replacement for jingles that can sometimes get kind of old at some stations. They are intended for college and non-profit stations only and sell for \$20. Any station interested in obtaining an audition copy, simply write the above address.

I have noticed that the service situation from record companies is often improved immensely by some companies who take great pains to get the product to stations as quickly and accurately as possible. This tendency of the companies to service regularly gains a lot of faithful personnel at campus outlets. It also helps to offset the rotten feelings that some companies just naturally spread by their negative reactions to inquiries by sincere individuals when attempting to obtain product. It is my belief that if all companies were to give the

(continued next page)

### LOS BLUES/VOLUME ONE (VOLUME ONE) UNITED ARTISTS UAS 5542

This Las Vegas based group incorporate big band jazz arrangements with vocals to put out some of the best sounds to be released in a long time. "More And More" is a la BS&T with a special flair. Every cut shows the unique sound of Jazz, Soul, and Latin flavor combined to make this one a sure winner. Other good sounds: "God Help Me" and "The Squirrel".

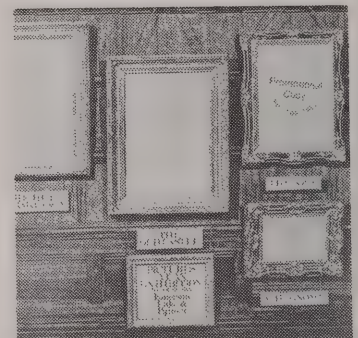


### FIVE MAN ELECTRICAL BAND (COMING OF AGE) LIONEL LRS 1101

After the 5's first success with the single "Signs", and their chart riding first album, the group strikes pay dirt again to reaffirm their position as hitmakers. Album includes the latest hit single "Absolutely Right".

### EMERSON, LAKE, AND PALMER COTILLION ELP 66666 (PICTURES AT AN EXHIBITION)

There are not many live recordings being made that can match this one for studio-like quality. ELP add their own individual style to this rendition of Mussorgsky's "Pictures At An Exhibition", recorded at Newcastle City Hall on March 26, 1971. Should have strong and varied appeal.

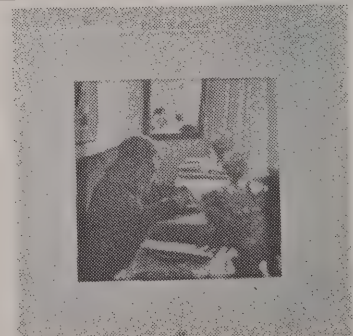


### MICK GREENWOOD DECCA DL 75318 (THE LIVING GAME)

This collection of all original material is bound to find rack space at campus stations. Mostly all low key numbers on this one, but Mick also shows versatility on "To The Sea" and "Situation Number Four".

### PAUL WILLIAMS A&M SP 4327 (JUST AN OLD FASHIONED LOVE SONG)

Paul Williams has got to be called one of the most successful contemporary songwriters in the business. On this first album for A&M, he exhibits the talent for writing that gave the Carpenters so many hit tunes. Included: "We've Only Just Begun", "Just An Old Fashioned Love Song", and "Let Me Be The One".





## Disc Notes

(continued from previous page)

excellent service of some, that there would not be some of the problems that exist between the companies and the stations. Call it idealism if you wish, but I have always enjoyed a great relationship with some companies while in radio, and it always seemed to be the same people at certain other companies that gave me the impression that they could care less if radio existed in anyway, shape, or form. Consequently, I could care less about these people myself, and have never even attempted to purchase or promote their products at any station I have ever been associated with. In a business where communication is of the greatest importance, some people have still not learned to communicate. It's a very sad situation when it gets to a point like that, but it can be relieved very simply in many cases by learning how to type or write, or just learning how to care.

To wrap things up for his month, I would simply like to say thank you, not only from the Journal of College Radio, but from all affiliated stations, to the record companies that have given all of us their undivided attention and courtesy over the last year, and hope that you will continue to do so. For now, remember that it is better to hear white lies from blue eyes than to hear blue lies from white eyes, whatever that means. See you next month.

## Other New Releases

<b>LIV</b> (Livingston Taylor)	<b>CAPRICORN</b>
<b>CHEECH AND CHONG</b> (Cheech and Chong)	<b>ODE</b>
<b>TAKE HEART</b> (Mimi Farina and Tom Jans)	<b>A&amp;M</b>
<b>ROCKIN' THE FILLMORE</b> (Humble Pie)	<b>A&amp;M</b>
<b>GATHER ME</b> (Melanie)	<b>NEIGHBORHOOD</b>
<b>BLUES AND BROWN</b> (Charles Brown)	<b>JEWEL</b>
<b>MERRY CLAYTON</b> (Merry Clayton)	<b>ODE</b>
<b>A POET, A MAN, A MIND</b> (Paul Roche)	<b>MERCURY</b>

## WGUC-FM Awarded

### \$76,555 CPB Grant

WGUC-FM, The University of Cincinnati's public radio station, has been awarded a \$76,555 grant by the Corporation for Public Broadcasting to establish the nation's first public radio music production unit.

The production unit grant will enable WGUC to extend its broadcast schedule by 16 hours per week and to produce more than 300 additional hours of programming during 1972.

WGUC is only the third station to receive a grant under the Corporation's \$900,000 Public Radio Production Unit Project. A public affairs unit has already been established at WOSU, Columbus, Ohio and at WHA, Madison, Wisconsin, a drama unit has been set up.

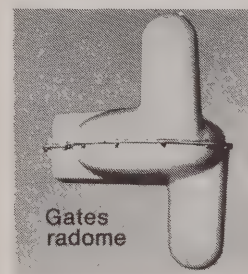
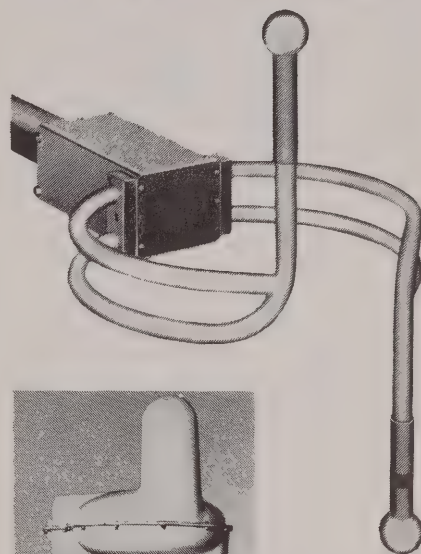
Dr. Warren Bennis, the university president, said, "The music production unit should add to the growth of the university, both by its contributions to the musical life of the community and by strengthening the ties between the university and the community."

Among the programs the unit will produce in its first year will be concerts of the Cincinnati Symphony Orchestra; six concerts from the Taft Museum Chamber series; 39 one-hour programs by faculty members and students of the University of Cincinnati's College-Conservatory of Music; three performances from the city's "Summer Opera;" and four concerts from the "May Festival," one of the last great choral festivals in the United States. In addition to concert and recital performances, the unit will also produce informative musical series in special fields; studio programs of music and comment, often with the performers themselves; and documentaries on the musical life of the community. Some of these programs will be made available to public radio stations throughout the United States by National Public Radio, the noncommercial radio network.

Announcing the grant, to WGUC, Al Hulslen, CPB's director of radio activities, said, "I am convinced that the Public Radio Music Unit at WGUC-FM will be of great benefit to listeners in the Cincinnati area, and will contribute to the further development of the total public radio system as well."

(continued on page 27)

# Gates circularly polarized FM antennas.



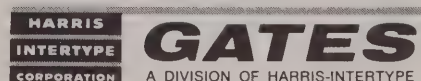
Gates  
radome

Gates' circularly polarized antennas combine mechanical ruggedness with transmission reliability. They are constructed of a special brass alloy to withstand corrosion from salt-laden air and industrial gases.

Performance-proven Gates antennas are available with one to sixteen bays. Accessories include 300 watt or 500 watt heaters, radomes, and automatic heater control systems for protection against icing. Null fill and beam tilt are also available.

Select the right antenna from the four circularly polarized antennas offered by Gates: Dual Cycloid for high power; Dual Cycloid II for medium power; Dual Cycloid III for low power and the Directional Dual Cycloid antenna.

For complete details, from the leading supplier of FM antennas, write Gates Radio Company, 123 Hampshire Street, Quincy, Illinois 62301.





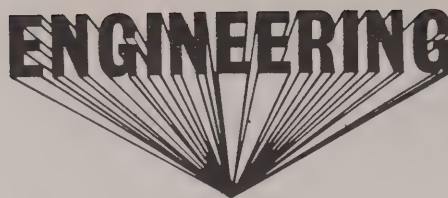
# PARASLOT

## Model SL8 for Channels 14-83 UHF low power TV transmitters and translators

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By  
**Ludwell Sibley**  
Engineering Editor

### Standard Frequency and Time Broadcasts

The National Bureau of Standards broadcasts standard frequencies, time announcements, and geophysical warnings continent-wide. The NBS stations are WWV, Fort Collins, Colorado, and WWVH, Maui, Hawaii. One or the other is audible throughout North America on six frequencies. They use 2.5 kW on 2.5 and 20 MHz and 10 kW on 5, 10, and 15 MHz. WWV also uses 2.5 kW on 25 MHz. The program format was changed in mid-1971 to broaden the usefulness of the services.

The carrier frequencies of the stations have essentially perfect accuracy, and are the standard references for calibrating receivers and signal generators. For receiver calibration, the most accurate technique is to set the BFO to the center of the IF passband and then tune for zero beat. For checking the accuracy of signal generators, a small amount of signal is coupled into the receiver input and the generator simply tuned for zero beat against WWV. If the generator being checked is above 25 MHz, one can take a second oscillator, feed it into a simple diode harmonic generator, and zero-beat it to WWV. The harmonics are then accurate, and are used to calibrate the high-frequency generator by zero-beating on a VHF receiver. The harmonic method is useful to 250 MHz or somewhat higher. In similar fashion, a generator lower than 2.5 MHz can be calibrated from its harmonics.

The NBS stations also send standard frequencies of 440, 500, and 600 Hz at various numbers of minutes after the hour. Their present schedule is:

	WWV
440 Hz	:02
600 Hz	:01, :03; :05, etc.
500 Hz	(Other intervals not used for silent periods or voice)

### WWVH

440 Hz	:01
600 Hz	:00, :02, :04, etc.
500 Hz	(Other intervals not used for silent periods or voice)
WWV sends no tone between :45 and :50; WWVH, between :15 and :20.	

Time announcements occur every minute. An 800-ms burst of 1000 Hz (1200 Hz on WWVH) marks the beginning of the minute. At the start of each hour the burst is 800 ms of 1500 Hz.

The hourly time announcements are available for direct rebroadcast as a non-commercial public service. The only requirements are that the announcement not be delayed, and that NBS be identified as the source. This is possible by having the local announcer give the hour and then cut to WWV for the hour beep and the words "National Bureau of Standards time." Carrier-current stations should contact the Bureau for permission to rebroadcast; FM stations need not. The address is Time and Frequency Division, Institute for Basic Standards, National Bureau of Standards, Boulder, CO. 80302.

Another service is a binary-coded-decimal time code. Called "IRIG H", it sends the day of the year, the hour, and the minute as long and short bursts of 100 Hz tone. The data rate is one bit per second. It may be useful for marking time on the single-channel logging recorders that some stations use for program documentation. If the recorder does not pass 100 Hz well, the WWV code can be filtered and frequency-doubled or -tripled before recording.

The stations also carry voice announcements. The present schedule is:

	WWV
Station identification	:00, :30
NBS explanatory announcement	:06
Universal Time correction	
Factor	:04
Six-hour propagation forecasts	:14
(W = disturbed, U = unsettled, N = normal, 1 = useless, 9 = excellent)	
Geolerts (solar flares, magnetic storms)	:18
North Atlantic storm warnings	:16
North Pacific storm warnings	—

	WWVH
Station identification	:29, :59
NBS explanatory announcement	—
Universal Time correction	
Factor	:03

(continued next page)



# Engineering

(Continued from preceeding page)

Six-hour propagation forecasts —  
(W = disturbed, U = unsettled,  
N = Normal, 1 = useless,  
9 = excellent)

Gealerts (solar flares, magnetic :45  
storms)

North Atlantic storm warnings —  
North Pacific storm warnings :49

More announcements are likely in the future. There are proposals for example, to put EBS alerts on WWV.

Although an ordinary short-wave receiver with a wire antenna is usable for hearing the time standards, a special WWV receiver is much better. These are available with crystal control and switch-selected frequencies. They are also obtainable with frequency diversity, meaning that whichever of two frequencies is stronger at a given instant is selected automatically. Diversity provides nearly complete protection against fading, and will probably be a requirement for a reliable reception of EBS warnings. Two short-wave receivers of the same type can be combined for diversity by simply tying their detector outputs together. This way the audio from the combination is the sum of the audio from the two frequencies. When one frequency fades, the AVC voltage from the unfaded signal suppresses the noisy frequency.

For reception in North America during

winter, a rough estimate of the best frequency is:

Range	Day	Night
0- 500 mi	5 MHz	2.5 MHz
500-1000 mi	10 MHz	5 MHz
1000-2000 mi	15 MHz	5 MHz

Full details on the Bureau of Standards services are available in NBS Special Publication 236, 1971 edition, "NBS Frequency and Time Broadcast Services," available for 25 cents from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The catalog number is C 13.11:236.

Other frequency and time services are available by radio. The 2.5-, 5-, 10-, etc., MHz frequencies are shared by at least eight other standard stations worldwide. Other frequencies are in use too. The table below gives the ones that should be usable in North America.

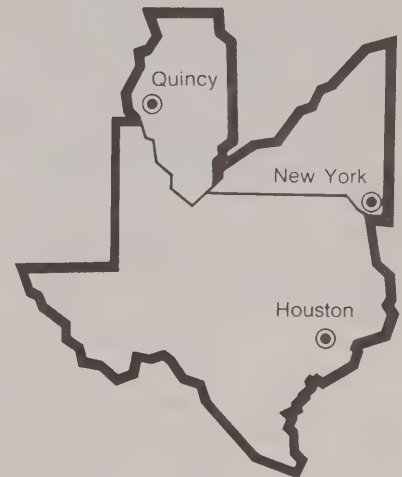
The horizontal sweep frequency on network television broadcasts is also very accurate, being exactly 15.750 kHz for black-and-white and 15.73426 kHz for color. It, too, is usable as a frequency standard, as is the 3.579545-MHz color subcarrier.

## A Few Hints for Cost-Cutting.

Leader tape is a staple item on the editing bench for all sorts of tape cueing and marking purposes. If bought in the

(continued page 20)

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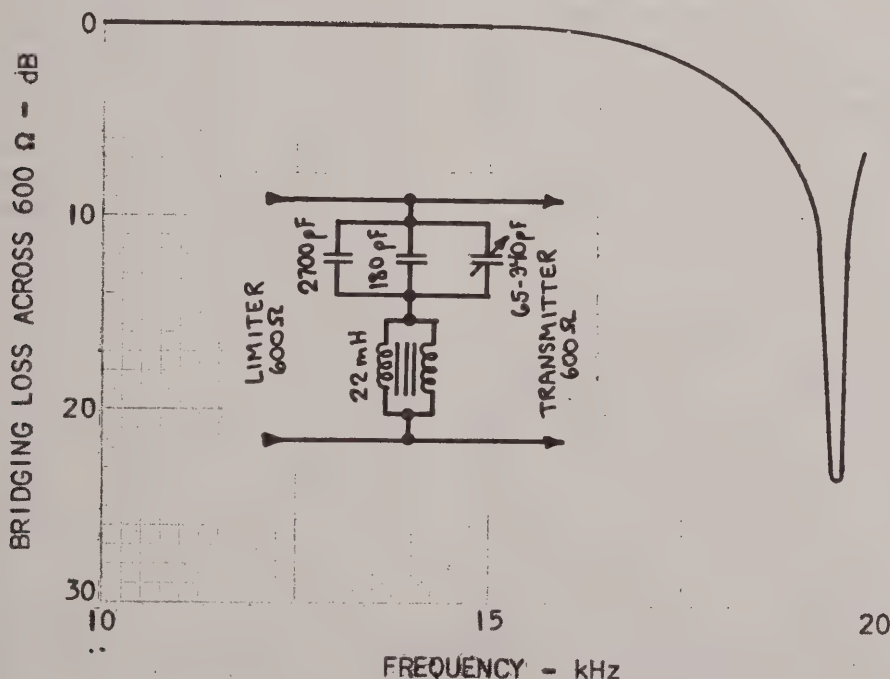


FIGURE 1. 19-KHz TRAP CIRCUIT

**HARRIS**  
**INTERTYPE**  
**CORPORATION**  
**GATES**  
A DIVISION OF HARRIS-INTERTYPE



# Engineering

(continued from page 19)

usual 75-cent hi-fi store package, it becomes expensive fast. A better way is to get 1000-foot lengths on 7-inch reels. At \$3 per reel, this works out to only 40% of the cost per foot. This is in addition to a free 71-cent reel and box.

"High-intensity" desk lamps have been quite popular for some years. They get their high light output and white spectrum by working the bulb quite hard, with resultant short life. Bulbs are fairly expensive when bought at a bookstore, but much cheaper at an auto supply place or an electronics distributor. Number 93 lamps, a common variety, are two for 79 cents at the campus book shop, 23 cents each at the local Sears store, and ten for \$1.70 in the Allied Electronics catalog. Ten will last about a year of studying.

Xylene bought in bulk has long been a fine substitute for tape head cleaner obtained in small cans. Gallon bottles are often obtainable at the local chemistry stockroom at a reasonable price. It also turns out to be available at paint stores - a check with one such dealer indicates that it can be ordered for only \$2.50 per gallon.

One frequently encounters frequency response graphs made on a special audio-logarithmic scale, calibrated from 20 Hz to 20 kHz. It's hard to find, even in bookstores at engineering schools. But most stores can special-order it readily. It's Keuffel and Esser 46 6882 "audio frequency" green tracing paper. A nearby bookstore came up with a box of 100 sheets in four days, at a cost of only \$3.20. It's the natural choice for proof-of-performance graphs.

Altec-Lansing for some time has produced good-quality repeat coils as part of its line of telephone repeaters. Most of them are advertised as "voice grade" quality. So one station that picked up a bunch of Altec No. 15192 coils surplus was pleasantly surprised to find that they were much better than claimed, being essentially flat from 30 Hz to 20 kHz. This rather exceeds the " $\pm 1$  dB 100 Hz - 10 kHz" rating, which refers to operation with unbalanced DC in the windings of up to 100 mA. Being a compact plug-in type good for transforming 600 ohms to 150, 250, 600, or 900, they are very useful. The station is using one, for example, to feed the program line to its FM transmitter.

When buying oil for light machinery such as turntable and fan bearings, it is not necessary to get an expansive grade. The

heavy-duty multigrade motor oils (SD and SE, for example) are heavily loaded with antioxidants, antifoaming agents, and constant-viscosity compounds. These are necessary for the rigors of automotive use, but don't do any good in turntables. Single-viscosity nondetergent oils (SA- and SB-type) are fine for this nondemanding use, and cost a good deal less.

## A Couple of Items for Studio Equipment.

Studio gear mounted in relay racks is rather hard to remove or install if it is at all bulky or heavy. Tape recorders and power supplies are properly a two-man job to install, getting the panel in the right place and installing the screws. There's an easy way out, however. If one installs 5/8 x 10-32 screws pointing outward from the rack, they will engage the panel holes as the equipment swings into position. Then some 10-32 brass thumbnuts with washers will hold the gear in place. Not only can one man do the job by himself, but no tools are needed. The washers reduce the degree of marring of the front panels too. Thumbnuts, an enlarged version of the old terminal nuts from No. 6 dry cells, are available at well-stocked hardware stores.

Frequently the amount of equipment in a relay rack expands beyond the capacity of the AC outlets. Equally often the outlets available at a carrier-current transmitter location are taken up with other plugs, leaving no spare power for test equipment. Either of these situations is easy to fix if one or more of the chassis units in question is equipped with a set of outlets to provide power for other uses. The neatest way to do this is to install a big Jones socket (Cinch-Jones S-412-SB) on the chassis, wiring its two rows of contacts to the AC line. This socket accepts up to six individual AC plugs of the flat two-wire type, relieving cord congestion.

## Magnecord Reel Adapters.

WJSC is looking for a pair of ten-inch reel adapters for the good ol' Magnecord PT-6A recorder. Anyone with a spare set is invited to contact David Cooley, WJSC Radio, Student Activities, Johnson State College, Johnson VT 05656.

## A "Cure" for Noisy Remote Lines.

A number of stations have their own cross-campus wire lines for remote broadcasting and transmitter feeds. Being exposed to the elements, these lines occasionally develop leaky insulation when water penetrates a splice or a pinhole in the

cable sheath. The result is a noisy line because of unbalance, that is, more leakage from one wire to ground than another.

The presence of DC on wire pairs aggravates the leakage, particularly if the DC is applied on a loop basis (one wire plus, one wire minus) rather than a simplex arrangement (both wires equally hot). The loop arrangement is common in dial intercom systems and on transmitter feed lines which incorporate simultaneous power control and remote metering (see p. 31 in the February, 1971, Journal for details). The simplex technique is usual on transmitter audio lines which provide power control without remote metering.

As a temporary fix for noisy pairs, it is sometimes possible to clear the imbalance by removing the DC. This effect has turned up in connection with rural telephone lines, which use DC loop signaling:

"One very interesting phenomenon was reported and documented by the maintenance forces. It was frequently found necessary to transfer service from one pair to another because the first had become noisy. The released pair was subsequently disconnected from the central office battery. Within a period of weeks, it would be found that the circuit had again become noisy on the new pair but could be restored via the old pair which had apparently 'come clear'. This situation was repeated many times" (E. A. Kangas of Bell Canada, "The Transmission Characteristics of Buried Alpeh Cable," *Proceedings of the National Electronics Conference*, Vol. 23, 1967, p. 642).

The effect that causes this self-clearing action is apparently "electro-endoosmosis." The theory is that if both wires in a splice are equally moist, the leakage to ground will be balanced and no noise will result. If a loop DC voltage is present, however, the potential causes the water to migrate away from the positive conductor toward the negative. This unbalances the leakage and hum sets in.

The audio voltage on the pair does not affect the leakage because it is alternating and small.

It thus appears that an emergency fix is to remove the DC voltage. The transmitter feed circuit can be swapped with a non-DC-bearing remote line. Or remote control can be given up for the time being. There is a chance that the noise will disappear, at least until Spring, when the weather is good enough for cable work.

This "cure" is hardly a permanent one,



but it can buy time until a repair crew can locate the wet spot in the cable.

A somewhat different experience was reported by one station, which had a remote line in a four-wire buried lead-sheathed cable. The cable sheath had sustained damage during excavation work. One pair became useless, and the other had a 1000-ohm leak to ground. It was decided to try to burn the leak out, so 120 VAC was fed into the cable, with an electric iron used as a current-limiting resistor. After some hours the iron became quite hot, and it was discovered that the leak, instead of burning free, had turned into a solid short. Too bad.

#### RC-5A Modification.

An interesting transmitter modification has been suggested by Bob Marnett of KRC (Rockhurst College, Kansas City). His idea; "Any LPB RC-5A or similar transmitter may be modified to well over ten watts by replacing the power transformer by a 350-0-350 volt (husky current rating) and the choke by 12 henries or so, adjusting Bt to 375 volts. This will give about 47 mills plate current on the RF final amplifier. Modulation percentage of 95-98 can be attained without excessive distortion or splatter. The final tank should be rewound with 32-gauge magnet wire." (He suggests about 8% more turns, in one-and-a-fraction layers.)

This modification may prove very useful in cases where the signal is marginal but not weak enough to justify a bigger transmitter. Or it may allow addition of a second dormitory via a coaxial line without adding a transmitter. It will involve a distinct tradeoff of tube life, however. The 6AL11 power section in the modulator, in particular, is already working rather hard. However, one can afford to change tubes quite often if higher-power operation saves buying another transmitter and program line.

It is recommended that a transmitter modified this way be used with both on-off control and remote metering. Details on this arrangement are available on page 41 of *Carrier-Current System Design*.

#### False Stereo Indications and How to Stop Them.

It is not too unusual for an FM listener to mention that the stereo lamp on his receiver flashes on and off intermittently while set to a monophonic station. Several college operations have discovered this condition.

The most straightforward explanation

of the effect hinges upon the high sensitivity of the pilot detector in the tuner, which will turn on the lamp if it encounters only small amounts of energy near the 19-kHz pilot frequency. The normal pilot level represents 8 to 10% modulation of the carrier. But the detector will respond to much lower levels, and will confuse high-frequency noise and distortion products with a real pilot tone.

Suppose that the audio chain and transmitter just meet the FCC requirement of 2.5% total harmonic distortion in the 100-7500 Hz band. Suppose that the station is sending a test tone of 6333 Hz, and that the modulation is nominally 100%. If the distortion is largely third-harmonic which is a common case, 2.5% distortion means that the 19-kHz third harmonic is down by  $(20 \log 1/0.025)$  or 32 dB.

However, the third harmonic is receiving about 18.7 dB of preemphasis in the transmitter, whereas the fundamental frequency receives only about 10.2 dB. The difference is around 8.5 dB. Thus the harmonic is no longer down 32 dB; it is down  $(32-8.5)$  or 23.5 dB. This corresponds to about 6.7% modulation at 19 kHz, which the tuner will readily detect as stereo pilot.

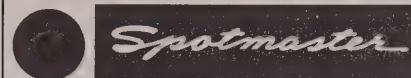
Obviously one does not normally go about sending 6333-Hz test tones. But it is evident that program material rich in high-frequency harmonic energy — cymbal crashes, electronically clipped guitar music, and the like — can provide the same false alarm.

Fortunately, this problem is pretty trivial to fix. All that is needed is some filter action to discriminate against power in the area of 19 kHz. Long equalized program lines roll off fast above 15 kHz, and give some filtering. It is easy to add a tuned trap to provide the necessary discrimination. Figure I shows a simple tuned trap using an "88"-mH loading coil wired for 22 mH and tuned to 19 kHz. Its bridging loss at 15 KHz and lower frequencies is less than a quarter of a decibel, but the loss around 19 kHz is 20 dB or better. The trap is best placed between the output of the limiter and the transmitter input, so as to clean up any harmonics arising in the limiter as well as previous stages.

#### Unlicensed FM Stations Shut Down.

Most FCC actions against unlicensed broadcasting operations involve carrier-current stations which are radiating excessively. Although such actions are acutely embarrassing to the station, they are not especially newsworthy. We can report two such actions, however, that are

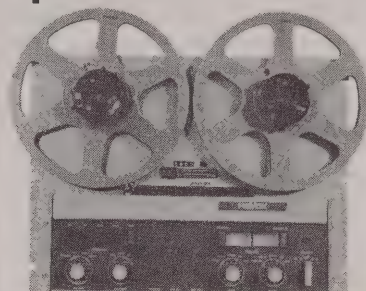
(continued on page 22)



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# Engineering

(Continued from page 21)

a little more interesting.

The first concerns the Army and pirate radio. The writer spent two weeks of Reserve training at Fort Bragg, North Carolina, last spring. The "Center for Military Assistance" there turned out to have a 10-watt FM station, "WCMA-FM." It was equipped much like any Class D station, but in better style: a specially-built air-conditioned building containing a main studio and a production booth. The facilities were quite good: four Ampex 350 recorders and full cartridge equipment. The transmitter was the standard Gates unit, operation on 103.3 MHz into a pair of antenna bays on a short tower. The operating unit was a psychological warfare company.

Everything was apparently in good order. The officer in charge was an old college radio hand, having been the general manager of a multi-kilowatt university station. But there was something strange about a 10-watt station operating in the commercial part of the FM band, with no visible station license or construction panel. The call WCMA, upon looking it up, belonged to a licensed station in Mississippi. When questions about all this were asked of the station staff, the explanation was that the operation was under Part 15 of the FCC Rules. Since Part 15 hardly allows 10-watt operation, or continuous carrier above 70 MHz, this explanation met with some resistance. The next claim was that the station was operating under Army authority.

This was all pretty fishy. The 88-108 MHz band is allocated for civilian use under exclusive control of the FCC. The call letter conflict was obvious. The idea of a psychological warfare unit broadcasting on the FM band had certain 1984ish overtones, particularly since the real purpose of a radio psywar unit is to convince the target audience that its view is the correct one, using any combination of misreporting and half-truths that will help. Such a unit could hardly qualify for a station license under FCC fairness standards. Basic national policy decisions reached in the 1920s exclude the government from broadcasting to the U.S. populace.

So a written inquiry went off to the FCC. Sure enough, a few weeks later a reply came back saying the matter had been referred to the Office of Telecommunications Policy, which has jurisdiction over government transmitters, and that the

"WCMA-FM" operation had been terminated.

A somewhat happier case was the KPOT caper. In early November, the wire services carried the story of an FCC shutdown in West Los Angeles. A young couple of student age had run an unlicensed station in their apartment for three days, playing a variety of music for the local area. The station was audible out to about 15 miles. The FCC agents had had the station shut down. The newspaper photograph showed a fairly complete studio, with two turntables, announce mike, a large console, and a rack of miscellaneous equipment.

Upon contacting the concerned parties, more information came to light. The operation had involved an AN/TRC-1, a World War II 70-90 MHz FM transmitter capable of about 50 watts' input power but hardly able to meet present FM type-acceptance requirements. It fed the standard TRC-1 antenna, a 3-element Yagi with vertical polarization, pointed out to sea. The transmitter was crystal-controlled on 88.1 MHz.

Apparently the FCC complaint came about as the result of interference to communications at the Los Angeles International Airport, which is entirely possible considering the design of the TRC-1 and the frequencies involved.

The FCC agents arrived in force: two of them, plus two fully equipped policemen. Whether they had a search warrant is open to doubt; at least they apparently did not produce one. The unlicensed operation was announced as being a misdemeanor carrying maximum penalties of one year and/or \$10,000 fine. An extensive report was sent to Washington, but no charges have been announced as yet. An FCC engineer was reported in the wire story as saying the FCC's normal procedure with first offenders is to issue a warning.

The rest of the story, however, is still to be told. The parties involved have been contacted by the local CATV company with an eye toward putting KPOT on cable FM. BMI and ASCAP are reportedly willing to grant copyright clearance, and the local telephone company is working out the costs for a program line. We may hear more of KPOT yet!

## A Correction.

The biographies of candidates for the IBS Board of Directors distributed with the ballots in November list the writer as being "presently" chief engineer of KCSB-FM. This is the result of a typing garble - the world should have been "formerly". Apologies to the present crew at Santa

Barbara!

## Associate versus Voting Membership in IBS.

One of the many unfortunate aspects of the recent court action and Board of Directors re-election was that it was completely irrelevant to the majority of IBS stations. The reason: they were not able to vote. This state of affairs comes about because members in "associate" and "participating" status outnumber those in "voting" status. "Associate" members are college stations which have not been advanced to "voting" membership. "Participating" status applies only to high school and college-prep stations. These definitions are covered in greater detail in the IBS Bylaws, printed on page 03.00 of the *Master Handbook*.

The main procedure in advancing from associate membership to voting status is to fill out a moderately detailed form, the "Broadcasting Facilities Questionnaire." The Engineering Manager checks over the answers and keeps the form on file for future reference. If there are no apparent problems, the applicant is approved for full membership, and goes on the voting rolls within a few weeks.

The questionnaire has a number of uses. In the case of carrier-current stations, it indicates whether the station is in a position to meet the minimum standards specified in the IBS Engineering Code (*Master Handbook* 50.90).

The Code covers availability of equipment for tape interchange, capability to provide a broadcast-grade signal, and, most importantly, basic ability to meet the FCC's Part 15 radiation limits. It is obviously impossible to deduce radiation intensity from a form. But quite frequently it is possible to suggest improvements that will raise the station's chances of surviving an FCC investigation. This particular use, of course, does not apply to FM stations, which are directly responsible to the Commission. Even then, occasionally an FM station turns up whose system is clearly unable to meet FCC requirements. In these cases it is helpful to point out the problem and head off trouble.

A second purpose of the form is to provide a basis for future correspondence. When an engineering inquiry from a member station comes in, it is very helpful to have the background data that the form provides. This saves the inquirer's time too. For this reason it is definitely best to have the form filled out conscientiously by a technically-oriented person. The extra



effort can pay off well.

Another use of the questionnaire is in keeping touch with new technical developments. With 400 stations in the System, new ideas pop up frequently. New concepts are frequently applicable to a good number of other stations. Often the form provides the first notice that a new way of doing things has appeared.

Even though associate members have come into IBS in large numbers in recent years (up 16% in 1971), the percentage of stations in voting status has also risen. It was constant at 37 to 38% between 1966 and 1971, but as a result of response to last September's "Data Banc" mailing it is now up to 45% and rising. Fritz Kass and at least one regional director have urged stations to respond; it would be good if other regional directors would press the issue.

If you are unsure whether your station is a voting member, here is how to find out:

A. If you received a ballot during the November election, you are in. Likewise if you have been notified of advancement.

B. In case of further doubt, look your station up on the master list of IBS stations (MH 05.00, November 1971). The "STA" column gives the status of each as of October 15.

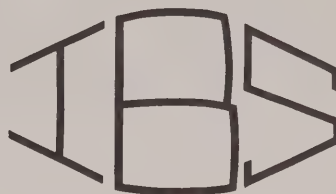
C. If your station is definitely an associate member, fill out a "Broadcasting Facilities Questionnaire" and send it to IBS Engineering, Box 2010, Stanford, California 94305. The form was distributed in the March and September mailings, and can also be xeroxed from MH 13.02-13.05.

We want to improve the fraction of the membership that is entitled to vote. This is an obvious way to tie national policies more closely to the stations' wishes. It is also very helpful in day-to-day dealings of our Washington representatives with the FCC staff: full membership implies that the station's facilities have been reviewed by a dispassionate but experienced third party, and appear to meet reasonable technical standards.

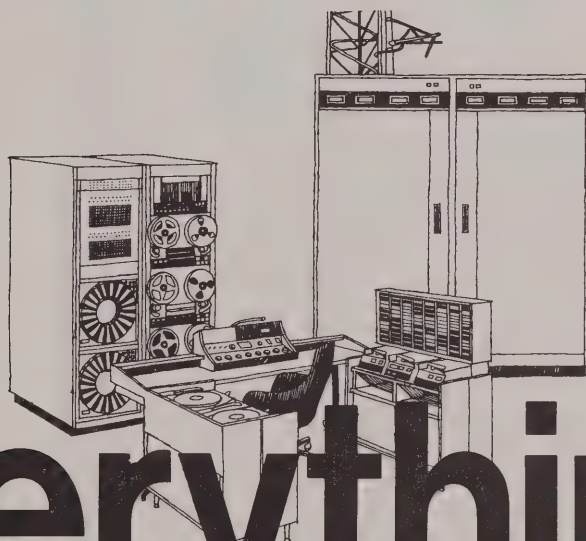
#### A Western Region Note.

For any Western Region station wanting to help John Wendorf in his regional activities, an up-to-date mailing list with addresses of 127 stations in the 13 western states is available from IBS Engineering.

It started out as Michael Bloom's 1969 list but has been brought up to date, showing both IBS and non-IBS stations.



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## Commercial Announcements

# FCC Limitations On Educational Stations

The Federal Communications Commission's rule limiting the carriage of commercial announcements on noncommercial educational broadcast stations has proved to be a source of recurrent difficulty to the licensees of such stations.

The pertinent rule, Section 73.503, which is set out in the box, was adopted in substantially its present form in 1970.<sup>1</sup> In adopting Section 73.503 the Commission intended to inform education licensees "just what types of financial support they could accept, what broadcast acknowledgment of support is permissible and, finally, what identification announcements are required under our sponsorship identification rules."<sup>2</sup>

The basic principle involved is that noncommercial educational stations shall furnish a noncommercial broadcast service. The broadcast of "commercials," whether or not compensation is received, is considered by the Commission to be inconsistent with the "essential noncommercial character" of the education service and, accordingly, is forbidden. This proscription applies to noncommercial educational stations operating on unreserved channels as well.<sup>3</sup>

On the other hand, the Communications Act of 1934 requires that

all matter broadcast by any radio station for which any money, service or other valuable consideration is directly or indirectly paid, or promised to or charged or accepted by, the station so broadcasting, from any person, shall, at the time the same is so broadcast, be announced as paid for or furnished, as the case may be, by such person. . . .<sup>4</sup>

In addition, the Commission recognizes the financial dependence of many licensees on outside "commercial" support.

The 1970 rules constitute the Commission's attempt to reconcile the inconsistency between the financial realities of educational broadcasting and its concept of a noncommercial, educational broadcast service.

The Commission's announced intent is to prohibit "mention of the product as such, e.g., Ford cars or the carbonated beverage called Coca Cola."<sup>5</sup> The Commission expressly rejected the suggestion that it permit "a brief descriptive line to be added to the identification by business name" on the ground that such "would tend toward undue commercialization of the medium." It would be, the Commission said, too close to "institutional advertising."

The rule is not designed, however, to proscribe "general public service announcements, which may be presented on ETV or educational radio through some of the agencies, such as a State urging the prevention of forest fires."<sup>6</sup>

As to broadcast auctions, the rules attempt to draw a line between identification of particular products or services (which is permissible) and "promotion of such products or services, beyond that which is required for the specific auction purpose" (which is not).<sup>7</sup>

The Commission's general approach seems to be toward rejection of the concept of an educational station's providing "exposure" in return for contributions. The fact of the contribution is required to be disclosed, but the Commission appears determined to preclude any tendency toward a quid pro quo.

In two specific instances the Commission has waived Section 73.503(d) of its Rules to permit the carrying of archival programs with commercials.<sup>8</sup> Even there, however, the Commission required the deletion of cigarette commercials in accordance with the Public Health Cigarette Smoking Act of 1969.

The foregoing article represents a general survey of the Commission's rules and policies on this subject. Stations requiring guidance in specific situations should consult a qualified lawyer or the Commission staff.

<sup>1</sup> Section 73.289, referred to in paragraph (d) of the rule, prescribes the form of announcement for sponsored programs.

<sup>2</sup> *Noncommercial Educational Stations*, 22 F.C.C.2d 903, 19 R.R.2d 1501, 35 Federal Register 7558 (1970).

<sup>3</sup> See Section 73.506 of the Rules adopted in *Noncommercial Educational FM Stations*, 20 F.C.C.2d 332, 17 R.R.2d 1959, 34 Federal Register 17873 (1969).

<sup>4</sup> Section 317, 47 U.S. Code 317. The present language of the section dates from the payola and plugola scandals of the early 1950's. The section, in conjunction with Section 508, goes on to require that the licensee exercise diligence in determining whether such payments have been made or promised to the station or any staff member thereof. See, e.g., *Fordham University (WFUV)*, 17 R.R.2d 146 (1969), where the station was censured for allowing one of its disk jockeys to promote record hops.

<sup>5</sup> *Noncommercial Educational Stations*, 26 F.C.C.2d 339, 341, 20 R.R.2d 1602, 1605 (1970).

<sup>6</sup> *Id.* at 343, 20 R.R.2d at 1607.

<sup>7</sup> *Ibid.*

<sup>8</sup> *Community College of Baltimore (WBJC-FM)*, 30 F.C.C.2d 868, 22 R.R.2d 1019 (1971), and *Mt. Diablo Unified School District (KVHS-FM)*, 22 R.R.2d 1114 (1971).

### 73.503 Licensing requirements and service.

The operation of, and the service furnished by noncommercial educational FM broadcast stations shall be governed by the following:

\* \* \* \*

(c) A noncommercial education FM broadcast station may broadcast programs produced by, or at the expense of, or furnished by persons other than the licensee, if no other consideration than the furnishing of the program and the costs incidental to its production and broadcast are received by the licensee. The payment of line charges by another station, network, or someone other than the licensee of a noncommercial educational FM broadcast station, or general contributions to the operating costs of a station, shall not be considered as being prohibited by this paragraph.

(d) Each station shall furnish a non-profit and noncommercial broadcast service. Noncommercial educational FM broadcast stations are subject to the provisions of 73.289 to the extent that they are applicable to the broadcast of programs produced by, or at the expense of, or furnished by others: however, no



announcements promoting the sale of a product or service shall be broadcast in connection with any program.

NOTE 1: Announcements of the producing or furnishing of programs, or the provision of funds for their production, may be made no more than twice, at the opening and at the close of any program, except that where a program lasts longer than 1 hour an announcement may be made at hourly intervals during the program if the last such announcement occurs at least 15 minutes before the announcement at the close of the program. The person or organization furnishing or producing the program, or providing funds for its production, shall be identified by name only, except that in the case of a commercial company having bona fide operating divisions or subsidiaries one of which has furnished the program or funds, the division or subsidiary may be mentioned in addition to or instead of the commercial company. No material beyond the company (or division or subsidiary) name shall be included. Upon request for waiver of the provision, the Commission may authorize the inclusion of brief additional descriptive material only when deemed necessary to avoid confusion with another company having the same or a similar name. No mention shall be made of any product or service with which a commercial enterprise being identified has a connection, except to the extent the name of the product or service is the same as that of the enterprise (or division or subsidiary) and is so included. A repeat broadcast of a particular program is considered a separate program for the purpose of this note.

NOTE 2: Announcements may be made of general contributions of a substantial nature which make possible the broadcast of programs for part, or all, of the day's schedule. Such announcements may be made at the opening and closing of the day or segment, including all of those persons or organizations whose substantial contributions are making possible the broadcast day or segment. In addition, one such general contributor may be identified once during each hour of the day or segment. The provisions of Note 1 of this section as to permissible contents apply to announcements under this note.

NOTE 3: The limitations on credit announcements imposed by Notes 1 and 2 of this section shall not apply to program material, the production of which was completed before January 1, 1971, or to other announcements broadcast before January 1, 1971, pursuant to underwriting agreements entered into before November 30, 1970.

NOTE 4: The provisions of Notes 1 and 2 of this section shall not apply during the broadcast times in which "auctions" are held to finance station operation. Credit announcements during "auction" broadcasts may identify particular products or services, but shall not include promotion of such products or services beyond that necessary for the specific auction purpose.

NOTE 5: The numerical limitations on permissible announcements contained in Notes 1 and 2 of this section do not apply to announcements on behalf of non-commercial, non-profit entities, such as the Corporation for Public Broadcasting, State or regional entities, or charitable foundations.

## Broadcast Scholarship Given By KGVB

A scholarship in broadcasting at the Barton County Community College in Great Bend, Kansas has been established by Radio Station KVGB in Great Bend.

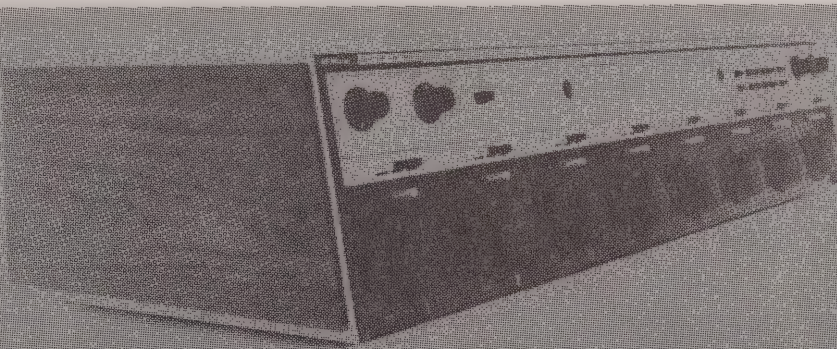
Robert Hilgendorf, executive vice-president and general manager of KVGB, presented a check for \$350 to Al Casad, president of the college's Endowment Association.

The scholarship will be used to

financially aid students enrolled in the broadcasting curriculum at the college. The program at Barton County Community College is the only approved broadcasting program in Kansas as approved by the Division of Vocational Education, Kansas State Department of Education.

Bill J. Ohlemeier, former broadcaster for KAYS, Inc., Hays, Kans., heads the program.

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*The following letter was sent to Speaker of the House Carl Albert and an identical letter to each United States Congressman by the National Association of Broadcasters. The Federal Elections Campaign Act, already passed by the Senate, contains two provisions which are regarded as highly discriminatory against broadcasting. The imposition of the "lowest unit rate" and the 6 cents per voter limitation applies to broadcasting and to no other media. The text of the NAB letters are as follows:*

The Honorable Carl Albert  
The Speaker of the House of Representatives  
Washington, D.C. 20515

Dear Mr. Speaker:

I am writing you because of the concern expressed by radio and television stations throughout the country about certain provisions contained in the Federal Elections Campaign Act of 1971.

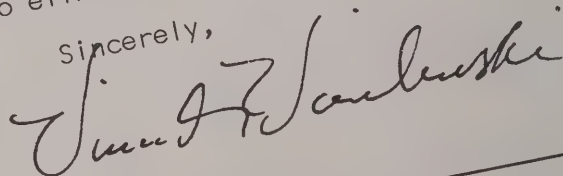
The broadcasting industry has been a consistent advocate of campaign reform, including a limitation on campaign expenditures. However, among broadcasters there is a strong feeling that such limitations must not discriminate against broadcasting. Two provisions of the proposed law are clearly discriminatory. First, while print media would be required to charge political candidates at "comparable rates" (a practice which broadcasting has observed for many years), broadcasters would be required to furnish political time at "the lowest unit rate." We believe that the comparable rate concept originally adopted by the House for the media is fair and equitable.

The second discriminatory provision is the 10¢ per voter limitation which, as proposed, differentiates between media. Of the total, only 6¢ could be spent on broadcast media, while the entire 10¢ could be spent in print. We believe that the House should remove this restriction and allow the candidate to spend the full amount in whatever media he prefers or, in the alternative, apply any limitations on a completely equitable basis.

We continue to urge the elimination of the equal time provisions of Section 315. Unless this is done, broadcasters will be prevented from providing free time for personal appearances to the principal candidates for the offices of President and Vice President. Enactment of legislation to repeal this limitation would surely serve the public interest.

Broadcasters feel most strongly about equal treatment of the media, and we urge you to consider action to eliminate the discrimination from the House-Senate Bill.

Sincerely,





## Capitol Hill

(continued from page 13)

of wire service paper boxes that now serves the purpose in the newsroom.

Your school purchasing agent can give you details and catalogs and help you with the purchase order, which in many cases must accompany the order, to prove that you are indeed connected to a college.

### COMING UP

Next month, in answer to a flood of two requests, I will run another list of phone numbers for the ever expanding Dial-A-News service that so many government and trade organizations have.

## Lichty Named

(continued from page 6)

UW-Madison campus where he teaches courses in radio-television-film as director of the commission staff until August 1972. The main purpose of the commission will be to recommend legislation for state regulation of cable, and prepare a comprehensive report for the governor. The commission will be holding hearings throughout Wisconsin in February. Lichty received his BA in Telecommunications from the University of Southern California, and MA and PhD in Speech at Ohio State University. He has taught and done research in broadcasting history, mass communications theory, and related areas.

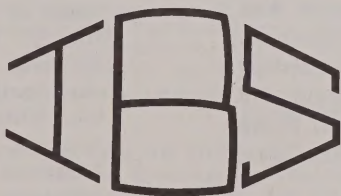
Mr. Timothy Larson, a graduate student at UW-Madison and formerly an instructor in radio-television at the University of North Dakota, has also been appointed to the cable commission staff.

## WRSE Celebrating 25 Years Broadcasting

WRSE is celebrating its 25th year of broadcasting with an entirely new format called "Silver Platter Gold." WRSE, the near-Chicago based Elmhurst College owned radio station, is "trying to simulate the bounds of a professional station," explained Dan Smith, program director. WRSE is using an intricate system of cross-programming, being very sensitive to the news times and places where double spots are used on other stations in the listening area.

(continued from page 17)

The purpose of the CPB Production Unit Project is to significantly strengthen the local capabilities of a number of stations, enabling them to better serve their communities. At the same time, the units provide talent pools for the public radio system and better equip stations to make contributions to NPR.



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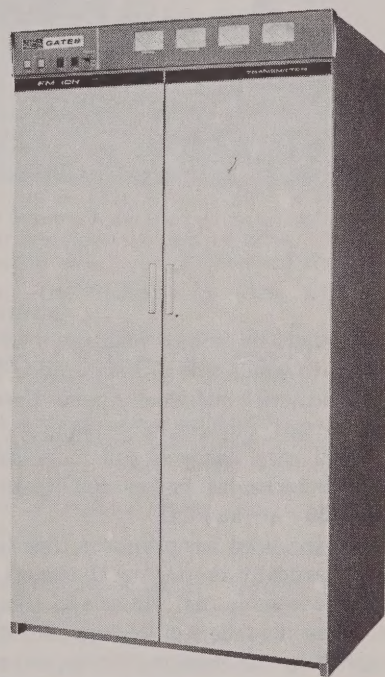
You figure the best ones cost over \$3,000. in your market, right? Wrong. The best ones cost under \$700. in your market. Demo and info on request. Call or write "the consulting people" . . .



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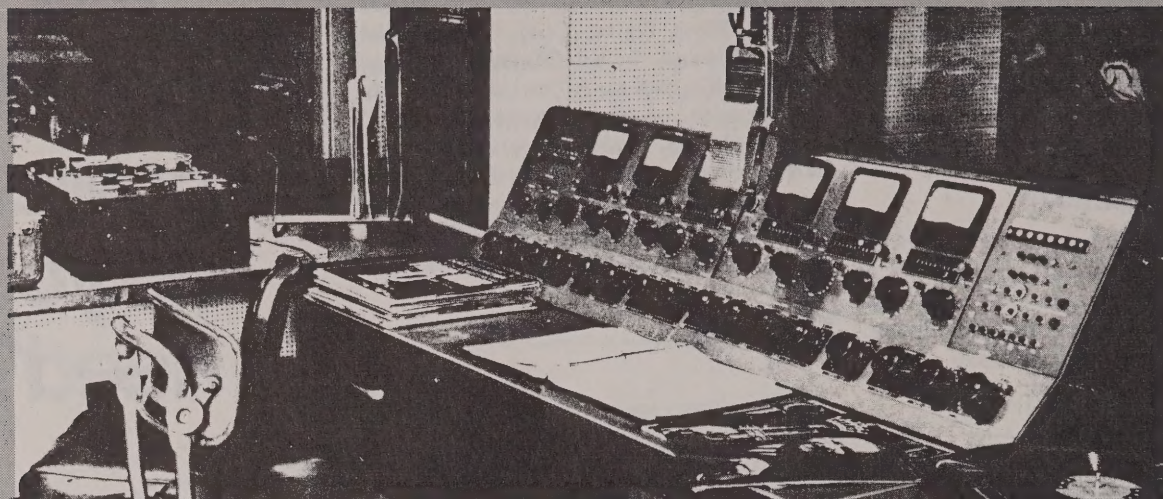
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## EDITORIAL

To regulate or not to regulate, that is the question. And, according to which side of the question you are on, it becomes a very emotional question. At one time in broadcast history, regulation was thought of as simply "technical" regulation. But, times have changed and technical regulation of broadcasting is becoming more and more a minor regulatory responsibility of the FCC.

Clay Whitehead has proposed that radio be "de-regulated" retaining basically the technical aspects of government regulation. There is much that can be said about his proposal. And at a time when the talk is of "de-regulation," it might seem ironic to suggest the commission take on more regulation. But that is what JCR proposes—at least for carrier-current systems.

The staff of JCR would be the last to recommend government rules and regulations, but if the FCC could stop with only technical limitations, then the following suggestions should prove beneficial to all of college radio.

These suggestions were recommended to the commission by LPB, Inc., a company which is well acquainted with the problems of carrier-current. In comments filed by LPB to the commission in the matter of amendments of Parts 0 and 2 of the rules relating to equipment authorization of RF devices, Richard Crompton suggested the following action:

- A. Strengthen the user control by the requirement of filing with the Commission and posting in the user's premises a certification by a responsible engineer of the compliance of the system with Part 15 of the Rules and Regulations. A requirement for Annual recertification would provide reasonable policing of any system changes.
- B. Increase the field strength permitted by systems operating in the AM broadcast band to 50 microvolts per

meter at a distance of 500 feet from the farthest point of the RF distribution system into which RF energy is delivered. With the additional policing suggested above, this magnitude of field strength will still provide no interference with other radio services. The present value of 15 microvolts per meter is virtually impossible to measure in the AM broadcast band because it is below the noise level generally encountered on any AM broadcast channel.

C. Insure adequate technical performance of the transmitting equipment utilized by making applicable the equipment performance specifications of Part 73 of the Commission's Rules and Regulations such as affects audio frequency response, audio distortion, modulation capabilities, harmonic output, etc., with the exception of the frequency stability requirements imposed on commercial licensed AM broadcast transmitters. In view of the low power capability and limited area coverage of the carrier current equipment, a high degree of frequency stability is unnecessary and highly uneconomical. Crystal control and prohibition from modulation of the oscillator should be required.

D. Insure the technical standards of the transmitters utilized in this service by the requirement certification or type approval.

The above suggestions are, for the most part, sorely needed to improve the overall standards of college broadcasting. The last suggestion should be expanded to include any equipment regardless of type approval if that equipment meets the technical standards set forth by the commission.

No one likes regulation, but in this instance, technical standards could improve the service and reduce the headaches of student broadcasters, the commission's field staff, and last but not least, college administrators.



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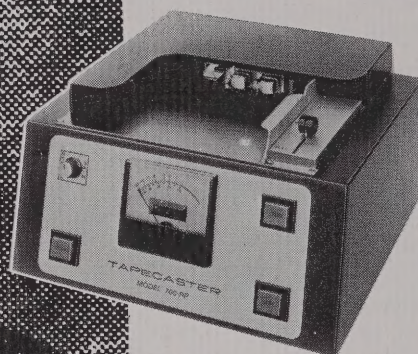
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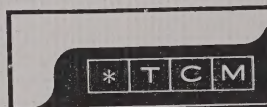
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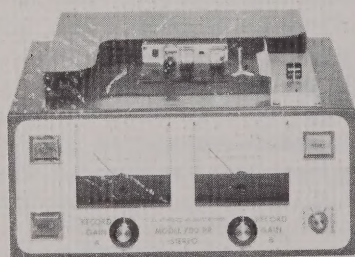
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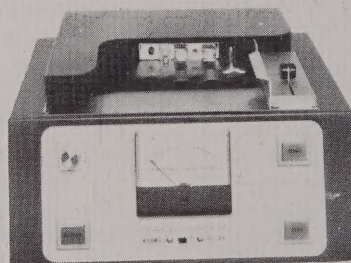
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